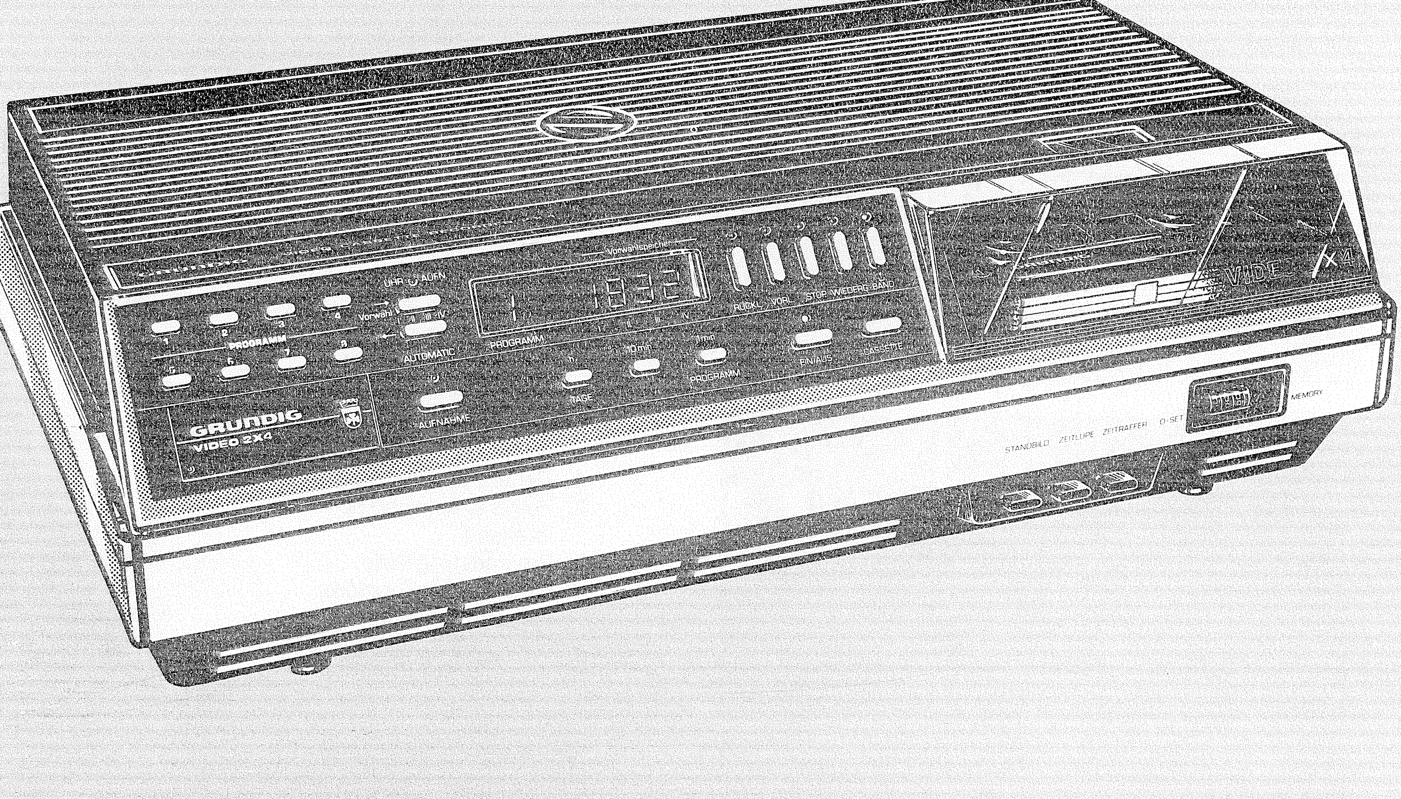
SYSTEM
VIDEO
2000

VIDEO 2x4-plus GB

GB Operating Instructions


GRUNDIG
VIDEO 2x4
PROGRAMM
AUTOMATIC
AUFNAHME
TAGE
PROGRAMM
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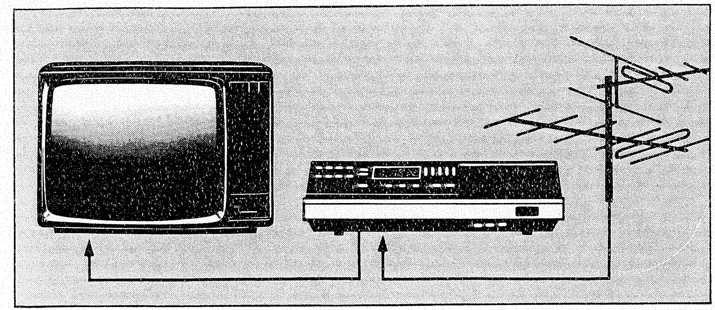
KASSETTE
STOP
WIEDERG.
BAND
STANDBILD
ZEITLUPE
ZEITRAFFER
D-SET
MEMORY

GRUNDIG



Setting up your video recorder

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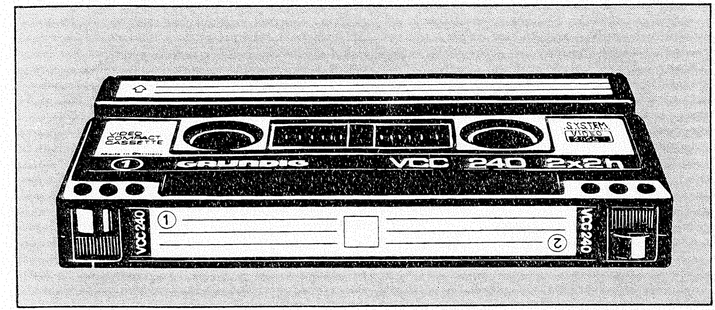
2. Connecting the recorder up Page 7


VIDEO COMPACT CASSETTE
SYSTEM VIDEO 2000
GRUNDIG VCC 240 2x2h
VCC 240
①
②

Your Video Compact Cassettes

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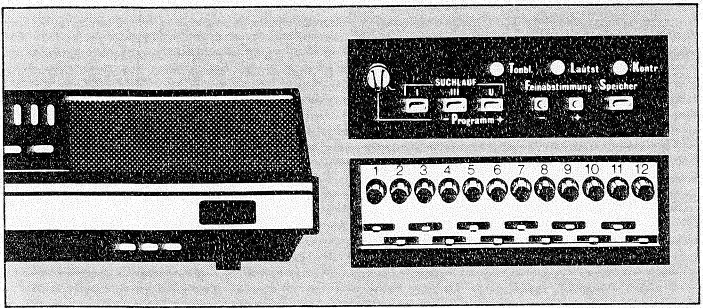
Tonbl.
Lautst.
Kontr.
SUCHLAUF
Feinabstimmung
Speicher
– Programm +
1 2 3 4 5 6 7 8 9 10 11 12

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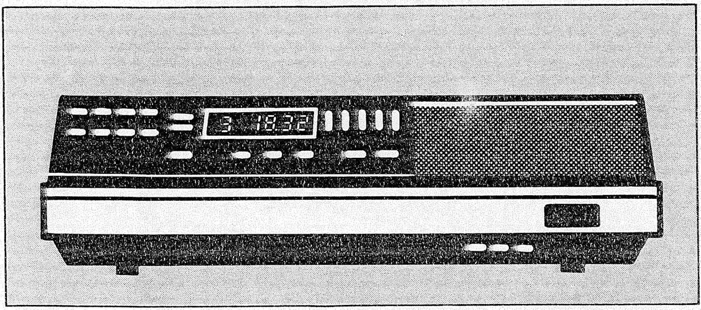

Using your Video 2 x 4

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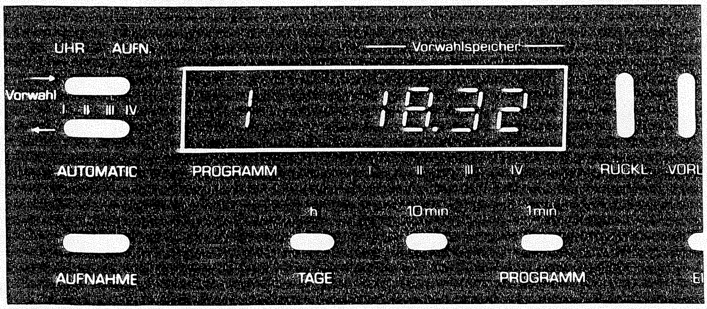
UHR
AUFN.
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I II III IV
1 18.32
AUTOMATIC
PROGRAMM
I II III IV
RUCKL.
VORL
h
10min
1min
AUFNAHME
TAGE
PROGRAMM

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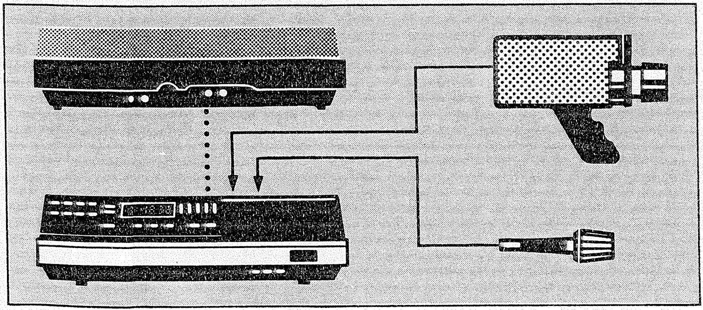

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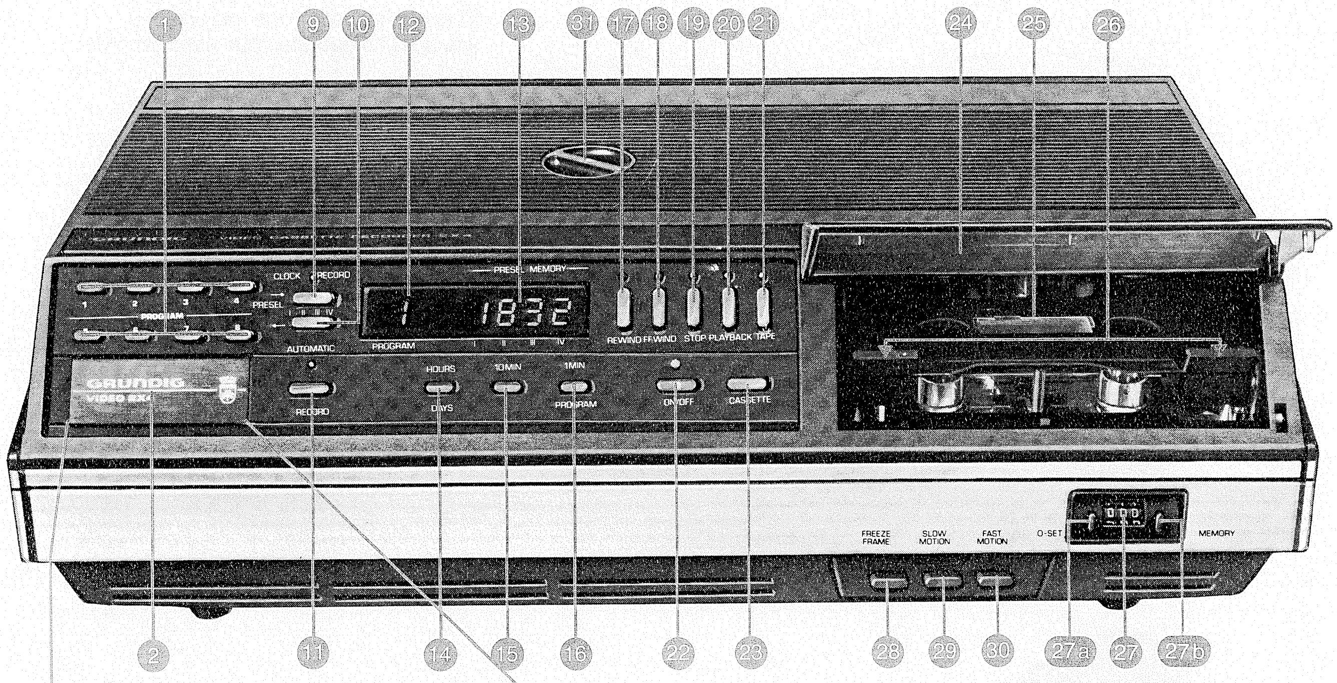
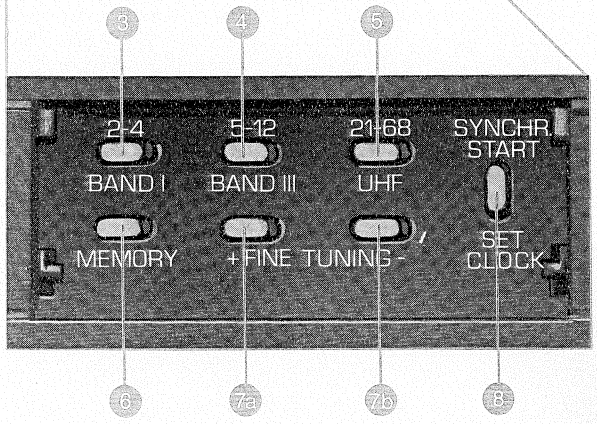
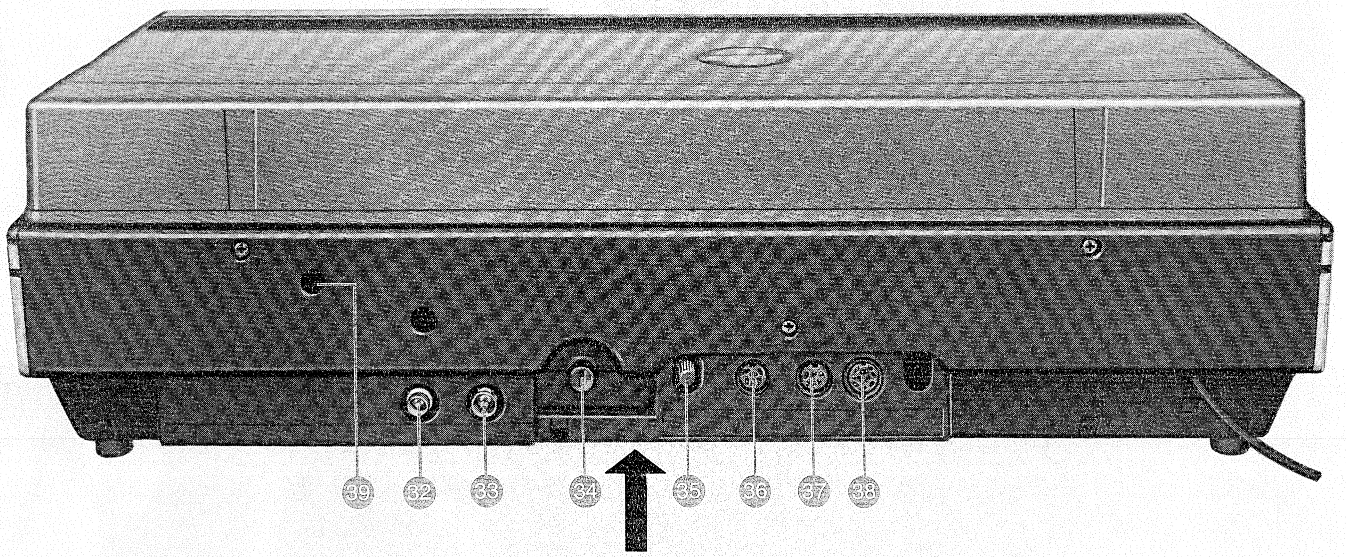

1
9
10
12
13
31
17
18
19
20
21
24
25
26
CLOCK
RECORD
PRESEL
PROGRAM
AUTOMATIC
PRESEL MEMORY
1 1832
PROGRAM
REWIND
FF-WIND
STOP
PLAYBACK
TAPE
GRUNDIG
VIDEO 2x4
RECORD
HOURS
DAYS
10MIN
1MIN
PROGRAM
ON/OFF
CASSETTE
FREEZE FRAME
SLOW MOTION
FAST MOTION
O-SET
MEMORY
2
11
14
15
16
22
23
28
29
30
27a
27
27b


3
4
5
2-4
5-12
21-68
SYNCHR.
START
BAND I
BAND III
UHF
MEMORY
+ FINE TUNING -
SET
CLOCK
6
7a
7b
8

The headings of the individual sections will be found at the top of each page on the left hand side.
To help you to identify all the parts of your machine mentioned, fold page 3 out when reading the instructions.


39
32
33
34
35
36
37
38

The type label is to be found on the bottom of the recorder.

Introduction

This book gives all the instructions you need to operate your video recorder.

You can

- record TV programmes
- record your own programmes with a Video Camera and microphone
- play back the recordings of your choice at your convenience.

Please carefully read this operating instruction booklet step-by-step.

IMPORTANT: The recording of television programmes is permissible only insofar as copyright of other rights of third parties are not thereby infringed.

General information on Video 2 x 4

This colour TV recorder was developed on the basis of the "Video 2000" system.

The **v**ideo **c**ompact **c**assette **(VCC)** can be turned over and played on both sides, thus giving a total playing time of up to 2 x 4 hrs. max.

Recording is independent of the TV set as the recorder has its own receiver section.

This makes the following recording modes possible:

Direct recording in which the TV set may be switched off or tuned to the same channel as the VCR.

Parallel recording: In which the recorder records the programme on one channel while you are watching another.

The built-in **automatic clock-controlled recording** facility enables you to programme the recorder up to 9 days in advance to record the transmissions of

- 4 different stations
- on 4 different days
- at 4 different times

without your having to be present.
Programming is simple and will easily be understood if pages 14 – 16 in this instruction book are read.
In addition to recording TV programmes, the recorder will enable you **to record your own programmes using a video camera and microphone** in picture and sound either via the aerial socket or via the AV socket.

Particularly suitable for this purpose are the GRUNDIG FAC 1700, FAC 1800 and FAC 1900 colour TV camera and the GRUNDIG FA 1007 black-and-white TV camera which can be operated directly via the AV socket of the recorder.

The power supply for these cameras is provided by the video recorder.

Nearly all modern colour and black-and-white TV sets with 60/75 Ω aerial input, as well as sets with AV (video) socket are suitable for **playing back recordings.** The latter TV sets have an "AV", "Video" or "VCR" preset channel memory or button.

If necessary, other TV sets can be used after matching the aerial connection and making minor changes in the set.

Your dealer will be pleased to advise you.

To transmit the recorded picture to the TV set the video recorder uses its own transmitter (modulator), to which the receiver has to be tuned. This tuning has normally only to be done once (see page 9).

You will obtain the best possible playback picture quality if your TV set has an "AV socket" (GRUNDIG top-class colour TV set).

If you use the Video Cable VK I as described in the section entitled "Connecting up the Recorder", this tuning process is unneccessary.

If playback is in the **AV** mode (**A**udio **V**ideo) via the "AV socket", the video signal will be fed directly to the TV set with a minimum of interference without conversion via the modulator and receiver section.
If you have a top-class GRUNDIG colour TV set, you will also have facility for cable-free remote control of the video recorder using the TV remote control transmitter.

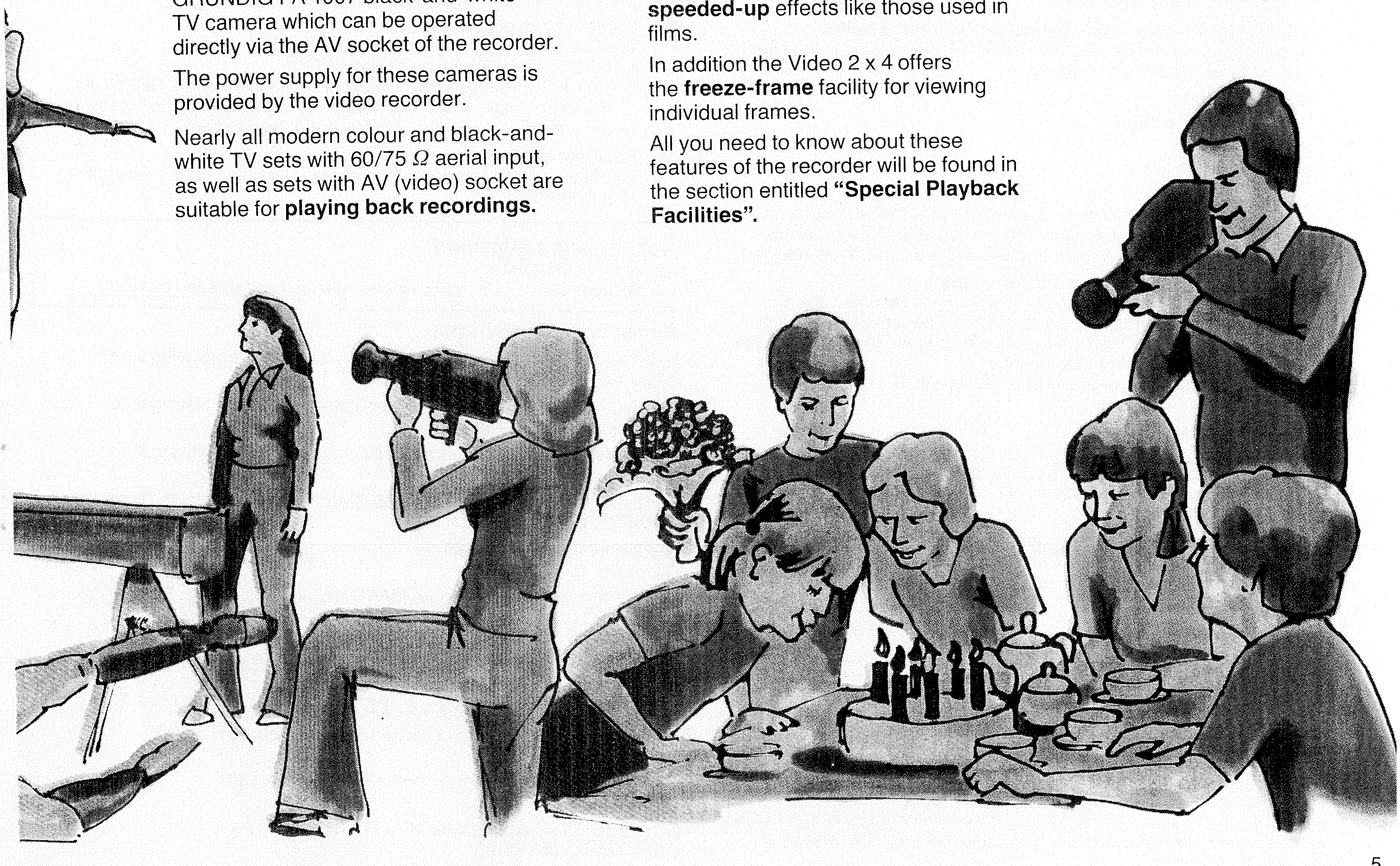
To do this, you will have to connect the recorder to the TV set with the GRUNDIG video remote control cable VFK I.

Your Video 2 x 4 also has **some additional attractive playback facilities.**

Innovations in circuit design have made it possible to achieve **slow-motion and speeded-up** effects like those used in films.

In addition the Video 2 x 4 offers the **freeze-frame** facility for viewing individual frames.

All you need to know about these features of the recorder will be found in the section entitled **"Special Playback Facilities".**



Controls and Sockets, Accessories

① **Station selection buttons**
One station can be allocated to each of the station selection buttons (eg: button 1 = "BBC 1", button 2 = "BBC 2", button 3 = "ITA" etc.). These eight buttons are inoperative when making clock-controlled or AV recordings.

② **Cover**
Access to the controls and indicators ③ to ⑧ can be gained by opening this cover.

③ **VHF I station self-seek button** (channels 2–4)

④ **VHF III station self-seek button** (channels 5–12)

⑤ **UHF IV/V station self-seek button** (channels 21–68)

⑥ **Memory button**
Used to enter stations located with the station self-seek buttons ③, ④ or ⑤, and the fine-tuning values set with buttons ⑦a and ⑦b in the memory

⑦a **Fine tuning "+"**
This can be used to make the picture contours harder (+).

⑦b **Fine tuning "–"**
This can be used to make the picture contours softer (–).

⑧ **"Set clock" and " synchronise start" button**
For setting the clock and then starting it with second accuracy.

⑨ **"Pre-select →" button**
This sets the clock-controlled automatic recording system ready for feeding in data, making correction and checking the clock-controlled recording data in the four pre-select memories. It may be used to run through the individual pre-select steps in the **forward direction.**

⑩ **"Pre-select ←" button**
This is for correcting and checking the clock-controlled recording data in the four pre-select memories. It may be used to run through the individual pre-select steps in the **reverse direction.**

⑪ **"Record" button**

⑫ **Station indicator**
The display depends on the setting of the input switch ㉟. In the "HF" setting one of the numbers 1–8 is displayed depending on which station selection button ① is pressed. In the "AV" setting " A " appears to indicate this function has been selected. The display is blank during clock-controlled recordings.

⑬ **Electronic clock display**
Shows the time of day or the pre-select data for clock programming.

⑭ **"Hours" and "days" clock setting button**
For setting the hour display on the clock, and also the switch-on days when programming for automatic clock-controlled recording.

⑮ **"10 min." clock setting button**

⑯ **"1 min." clock-setting and channel programming button**
For setting the minute figure on the clock, and for feeding in the channel required when clock programming.

⑰ **"Rewind" button**

⑱ **"Forward wind" button**

⑲ **"Stop" button**

⑳ **"Playback" button**

㉑ **"Tape ⏏" button**
This terminates any mode (record, playback etc.) the recorder is in and causes the tape to be pulled back into the cassette. As soon as the lamp above the button lights up, any desired function can be selected.

㉒ **ON/OFF button (with yellow indicator lamp)**
This button should be depressed to switch on the recorder. If it is depressed for a second time, the recorder will switch off (the built-in aerial amplifier and the electronic clock will continue to operate, ie: the recorder is not isolated from the mains).
N. B. If an automatic recording is planned, the VCR must remain switched on.

㉓ **"Cassette" button**
Cancels any preceding function. When it is pressed, the cassette compartment automatically rises up, the compartment flap opens and a cassette can be pushed in or taken out.

㉔ **Cassette compartment flap**
To open: Press the "cassette" button ㉓ and lift flap to locking position.
To close: Push flap down until it engages, and the cassette compartment will then be lowered down automatically. The cassette compartment is now locked.

㉕ **Cassette compartment**

㉖ **Cassette retaining clip**
The cassette can be released by pressing the clip down.

㉗ **Tape position indicator (Counter)**

㉗a **Counter re-set button**
The counter can be set to "000" by pressing this button.

㉗b **Counter memory button**
Facilitates location of the beginning of a recording if it is not at the beginning of the tape. If the tape is run forwards or backwards with this button in the depressed position, it will automatically stop when the counter reaches "000".

㉘ **Freeze-frame button**
Only operates on playback.
Operation of this button stops the tape and allows a particular scene to be studied closely. Details will be found on page 12.

㉙ **Slow-motion button**
Only operates on playback.
Operating this button mutes the sound and reduces the playback (tape) speed to $^1/_3$.

㉚ **Fast-motion button**
Only operates on playback.
Operation of this button also mutes the sound and approximately triples the playback speed.

㉛ **Picture enhancer**
This may be used to vary the sharpness of the picture on playback.

㉜ **Aerial output socket**
Use the aerial cable supplied to connect the aerial output of the recorder to the aerial input of the TV set.

㉝ **Aerial input socket**
Connect the aerial cable previously connected to the TV set to this socket.

㉞ **Channel adjustment control**
The frequency of the output channel from the recorder can be varied by rotating this control. You will find details of when this is necessary and what points must be observed on page 9.

㉟ **Input selection switch** (only operates on record)
The input from socket ㉝ or socket ㊱ is recorded depending on the position of this rotary selection switch.
When viewed from the back of the recorder, clockwise setting = "AV", anti-clockwise setting = "HF".

㊱ **AV socket**
The following equipment can be connected to this socket:
1. A TV set with AV socket. This gives the best picture and sound quality on playback.
2. Another video recorder with AV socket for copying recordings.
3. Electronic video cameras with video-frequency output (eg: GRUNDIG FAC 1800, FA 1007).

㊲ **Microphone socket**
For connecting up a microphone. Connection must be made before depressing the record button. You can then record your own commentary during a recording.
Subsequent sound dubbing is not possible.

㊳ **Remote control socket**
The following may be connected to this socket:
1. GRUNDIG VCR remote control VFR II
2. GRUNDIG remote control cable in conjunction with a GRUNDIG top-class color TV set. Cable-free remote control of the recorder is then possible using the remote-control transmitter of the TV set.

㊴ **Residual carrier**
This is only of importance for the dealer. Care should be taken not to alter its position.

Accessories supplied

Aerial connection cable
GRUNDIG VCC   Compact Video Cassette pre-recorded on side 1

Accessories available

GRUNDIG VCC 120 Compact Video Cassette, 2 x 1 hr. playing time
Order No. G · MP 71-00

GRUNDIG VCC 240 Compact Video Cassette, 2 x 2 hr. playing time
Order No. G · MP 72-00

GRUNDIG VCC 360 Compact Video Cassette, 2 x 3 hr. playing time
Order No. G · MP 73-00

GRUNDIG VCC 480 Compact Video Cassette, 2 x 4 hr. playing time
Order No. G · MP 74-00

GRUNDIG Video Cable VK I
Order No. G · MO 63-00

GRUNDIG Video Remote control VFR II (cable-connected)
Order No. G · MP 61-00

GRUNDIG Video Remote Control Cable (for cable-free remote control in conjunction with GRUNDIG top-class Super Color set)
Order No. G · MP 64-00

Automatic PAL/SECAM Switch-over Module for reception of PAL/CCIR standard B and G and of SECAM standard B and G (GDR border areas).

GRUNDIG Camera Remote-Control Adapter CFA 1801
Order No. G · MQ 84-00

GRUNDIG Cleaning Cassette VCC-R 1 for VIDEO 2 x 4
Order No. G · MQ 75-00

Positioning, Connecting up the Recorder and Switching On

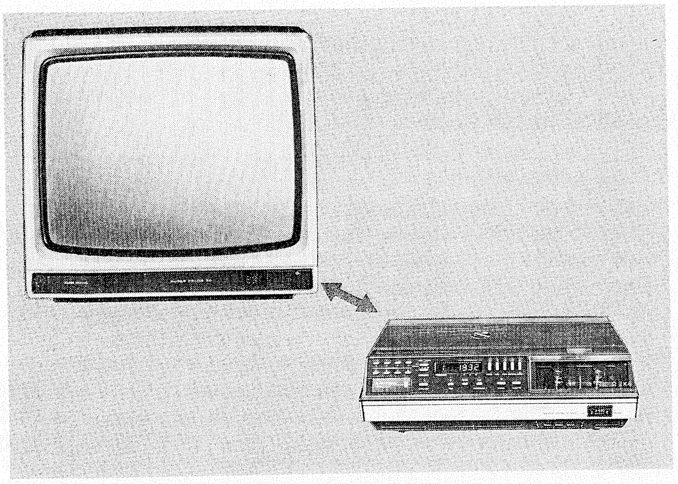
Positioning

Before the Video 2 x 4 can be used, it is necessary to install it and to carry out adjustments on both the TV set and the Video Recorder itself.

Normally, this service will have been provided by your dealer. If not, the following instructions in this section must be carried out.

Positioning should be undertaken by your dealer and the following points should be observed:

- The recorder should be set on up an **even, solid, horizontal** surface,
- There must be **adequate** ventilation if it is set up in a wall unit,
- The location must be such that the **ventilation slots** in the bottom and
- the **ventilation slots** in the upper part of the cabinet are not obstructed (risk of overheating).
- To prevent mutual interference we recommend that a **minimum distance** of 50 cm be maintained between the recorder and the TV set.
- Select a location such that the recorder is **not in the immediate neighbourhood of radiators** and is **not in bright sunlight.**



Minimum distance
– 50 cm

Do not expose the recorder to moisture (this may occur when there are sharp changes in temperature, as for example, when transporting the recorder from a cold storage area to a warm room or when the room has been thoroughly ventilated during the cold season). If this should occur, allow the recorder to stand with the cassette compartment open for a fairly long period (at least 2 hours).

Connecting up the Recorder

The following connections normally only need to be made once.

Your dealer will be glad to help you if necessary.

1. Aerial Connection

Remove the aerial plug from the aerial socket of your TV set and plug it into the aerial input socket ㉝ of the recorder.

2. Connecting the colour TV set and the recorder

Connect the "TV set" socket ㉜ on the video recorder to the aerial input socket of the TV set using the aerial connecting cable supplied.

3. AV socket

If you have a TV set with an AV (Video) socket and you wish to use it, you will require GRUNDIG Video Cable I, which can be supplied as an accessory.

Plug the video cable into the AV socket ㊱ on the recorder and into the corresponding socket on the TV set. This will give you a better playback quality without the need to match the recorder to the television set.

4. Mains Connection

VIDEO 2 x 4 is intended for operation from 240 V/50 Hz mains in GB.

Before the video recorder is connected to the mains after changing location or installing, it **must always be switched off** (ON/OFF-button ㉒ released).

Only then plug the recorder into the mains.

The **figure 8888 will flash** in the electronic clock even if the recorder is not switched on.

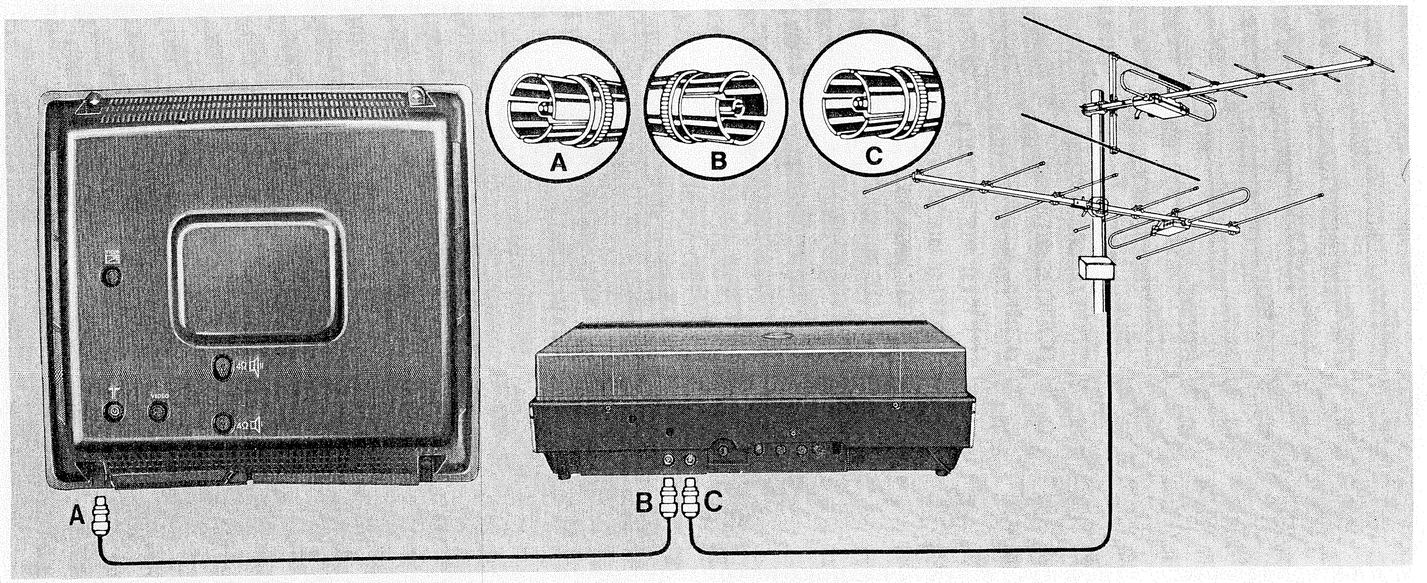
The flashing indicates that the clock should be set.

Additional information for sets used in Great Britain

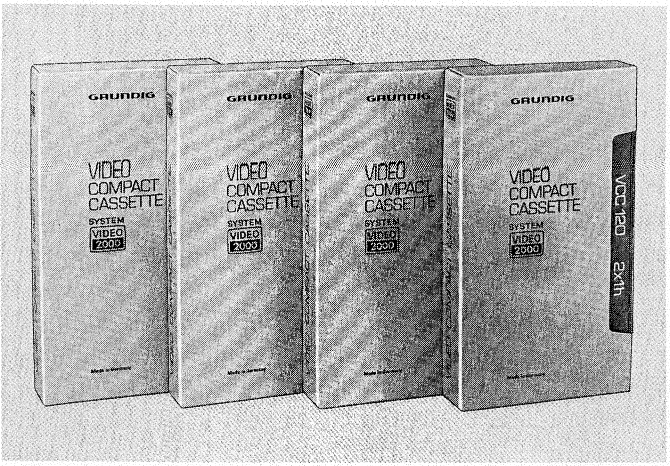
Fit or have fitted a 13 A 3-pin plug and fit the plug with a 3/5 A fuse. Connect the brown wire of the mains lead to the live pin, marked "L" or red or brown and the blue wire to the neutral pin, marked "N" or black or blue – on no account must either of the wires be connected to the earth pin, marked "E" or green or green/yellow.

Important Note

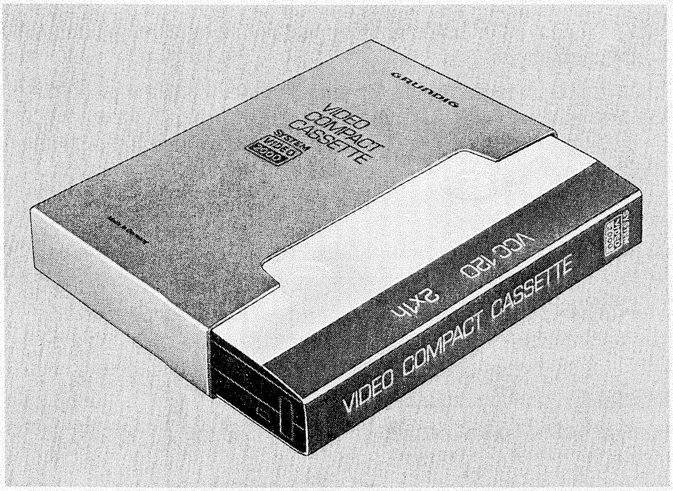
The video recorder acts as an aerial amplifier for the colour TV set and must therefore be plugged into the mains before the TV set can be used.



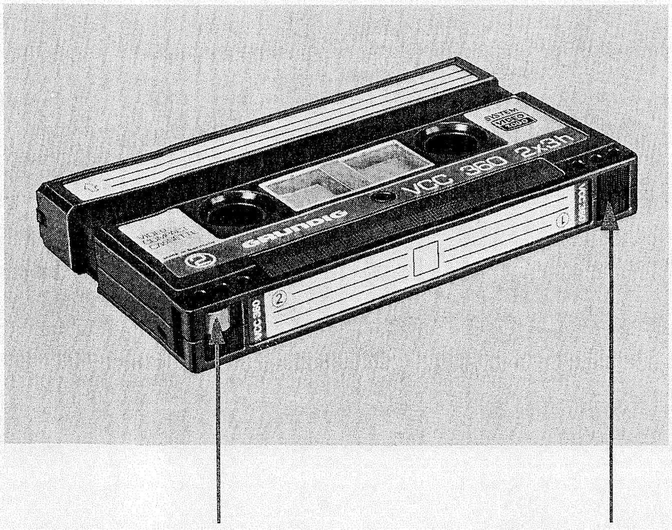
Video Compact Cassettes


GRUNDIG
VIDEO COMPACT CASSETTE
SYSTEM VIDEO 2000
VCC 120 2x1h

At present there are four different GRUNDIG video compact cassettes with up to 8 hours total playing time.

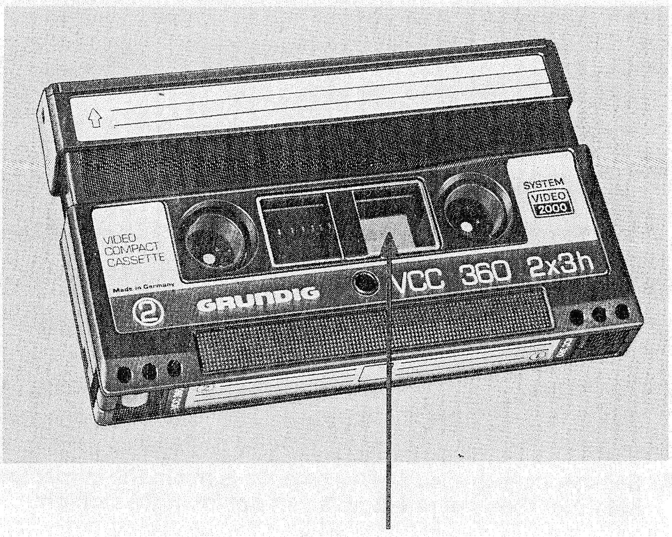

GRUNDIG
VIDEO COMPACT CASSETTE
SYSTEM VIDEO 2000
VCC 120 2x1h
VIDEO COMPACT CASSETTE

The cassettes have pocket book dimensions, making storage easy. They are supplied in a filing box and it is recommended that you **keep them in this box.** The transport lock will no longer be needed.


GRUNDIG
VCC 360 2x3h
Record lock "on"
(red field showing)
Record lock "off"
(black field showing)

Erase Lock

VCC cassettes can be erased and used for recording again. To prevent recordings being accidentally erased, both sides of the VCC cassettes have a record lock. If you wish to prevent erasure, set this lock for the side concerned to red. If you wish to re-use a side which has been locked, switch the lock back again (black field showing).


SYSTEM VIDEO 2000
VIDEO COMPACT CASSETTE
GRUNDIG
VCC 360 2x3h
Left hand spool

When a cassette is **inserted,** the **tape should be fully wound onto the left hand spool** so that it is at the beginning.

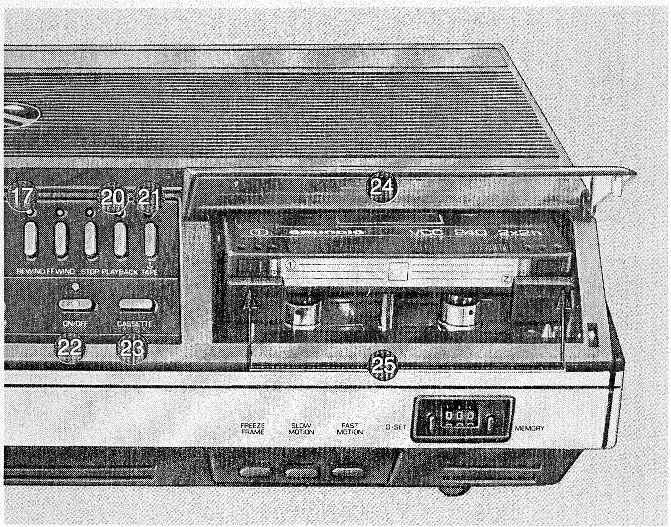
Inserting the Cassette

Depress the on/off button ㉒ and the yellow indicator will light up. On depressing the "cassette" button ㉓ the cassette compartment ㉕ will rise and the cassette compartment flap ㉔ will spring up. Open this flap until it reaches the locking position. Insert the cassette with the required side upwards, for example, side 1 in the case of an unused cassette. Push the cassette into the compartment until it clicks into position. Close the cassette compartment flap and the cassette compartment will automatically lower itself. The cassette compartment flap is electronically locked. The recorder is now ready for operation and the red lamp above the "tape ⏏" button ㉑ will light up. If the cassette is unused it is essential for the tape to be fully wound onto the left-hand spool. If this is not so, wind the tape onto the left-hand spool by depressing the "rewind" button ⑰.

Removal of the Cassette

Depress the "cassette" button ㉓ unlocking the cassette compartment flap ㉔ so that it again springs up. Lift the flap until it locks in position. To remove the cassette depress the cassette retainer ㉖ downwards and extract the cassette.

If the recorder is switched off, the cassette compartment cannot be unlocked for opening.

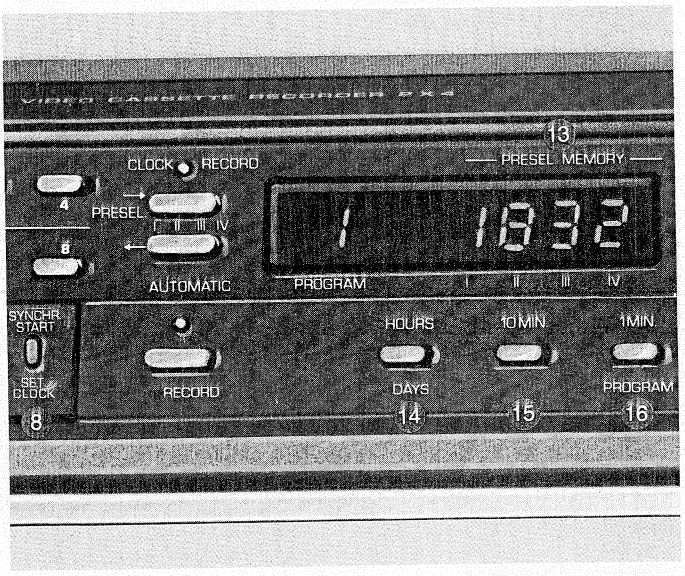

17
20
21
24
REWIND FF-WIND STOP PLAYBACK TAPE
ON/OFF
CASSETTE
22
23
25
GRUNDIG VCC 240 2x2h
FREEZE FRAME
SLOW MOTION
FAST MOTION
O-SET
MEMORY

Setting the Clock, Matching the Colour TV Set to the Recorder

Setting the clock

The recorder has a built-in clock. The time of day is indicated by four figures in the display ⑬. The clock can be set even with the recorder switched off and can be read during all the operating modes with the exception of clock-controlled recording. Between the minute and hour figures there is a flashing decimal point.

Four flashing "8" 's indicate that the clock has to be set.



To **set the clock** proceed as follows:

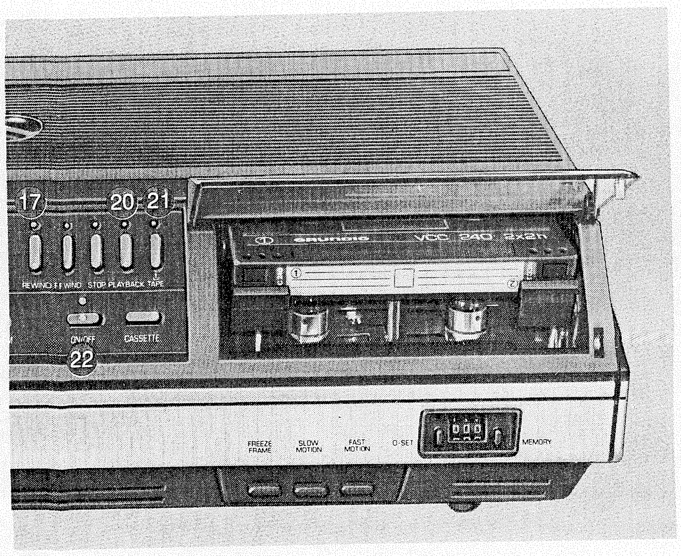
- Lift the flap ② on the recorder.
  Depress the "set clock" button ⑧ and the display will indicate 0.00. The decimal point between the hour and minute display will now flash continuously, but during setting it will be steady.
  Now commence setting the clock within 12 sec.

Set the time, **eg: 18.32,** in the following sequence:

- Repeatedly depress the "hours" button ⑭ until the figure **"18"** appears.
- Repeatedly depress the "10 Min." button ⑮ until the figure **"3"** appears.
- Repeatedly depress the "1 Min." button ⑯ until the figure **"2"** appears.

If you use a clock for comparison, start setting the clock in advance of the required time. Only when the seconds hand of the comparison clock reaches 0 (ie: 18.32) should you depress the "Synchr. Start" button ⑧ again. The clock will now run accurately to the second.

The decimal point between the hour and the minute display will start flashing again.



Matching the colour TV set to the recorder

Matching is carried out with the Video Compact Cassette supplied. This has a prerecording on side 1 at the beginning of the tape.

The aerial plug should be removed from the "aerial input" socket ㉝while the tuning is carried out.

You should now tune your TV set to the output channel of the recorder which is in the UHF band around channel 36. Carry out the tuning process and any fine tuning required in accordance with the TV set operating instructions.

Proceed as follows:

- Switch on the TV set and select the AV channel.
- Switch on the video recorder using the on/off button ㉒ and the yellow indicator light will light up.
- Insert the cassette supplied with side 1 upwards into the recorder to carry out the tuning.
- If the tape is not completely wound onto the left hand spool, you should first depress the "rewind button" ⑰ so that the tape is wound back to the beginning.
- Now depress the playback button ⑳ (the green indicator lamp will light up) and the recorder will supply the test pattern already mentioned.

TV sets with station self-seek

Depress the UHF-band self-seek button on the TV set. The station self-seek process will stop automatically when the recorder test pattern has been found (if necessary, correct with the fine tuning). Now press the memory button.

TV sets without station self-seek

Set the band selection switch on the TV set to UHF. Turn the station tuning knob upwards from the lowest channel (channel 21) until the recorder test pattern appears, continue turning the knob in the same direction until the test pattern just disappears again, and then turn back until the best playback quality is obtained.

TV sets with stations computer (sythesiser)

Programme TV set for channel 36.

Turn channel adjustment control ㉞ on the back of the recorder fully **anti-clockwise.** Then turn the control **clockwise** until the recorded test picture appears for the first time and adjust finely for optimum picture.

Plug the aerial plug back into socket ㉝ on the recorder. If the test pattern on the tape shows Moiré patterns or interference on the TV set, the output channel 36 of the recorder modulator is already being used by a TV station.

For sets **with** and **without station self-seek** you should then tune to another channel by rotating the channel adjustment control ㉞ and repeat the matching process. In the case of sets **with stations computer** a different channel (between channels 33 and 42) should be programmed into the TV set and the matching process likewise repeated.

If the test pattern has already been played, you will have to rewind the tape by pressing the rewind button ⑰ and start playback again with button ⑳.

If playback of **the test pattern is satisfactory,** you can **stop the tape** by pressing the "tape ⊥ " button ㉑. The red indicator lamp above button ㉑ will indicate that the tape has been stopped and pulled back into the cassette.

Operating and Tape-Wind Functions

The recorder has a computer-controlled function sequence which prevents incorrect operation.

All the operating modes are indicated by the light-emitting diodes above the buttons ⑨, ⑪ and ⑰ – ㉑ after acceptance by the recorder. Operation is simple as switching over from one running function to another is possible **without** pressing the stop button. An exception is the record mode (button ⑪) which can **only** be selected or terminated from the "stop" or "tape ⏏" settings.

The **record button** ⑪ is protected against accidental operation as it is **not possible** to switch over to another running function during record.

During record and playback the tape is threaded in, ie: it is in contact with the head drum.

Playback Button ⑳

Insert a recorded cassette, depress the playback button ⑳ and switch the TV set to the "AV" setting.

The recording can then be viewed on the TV screen and the sharpness of the picture can be adjusted with the **picture enhancer** (crispener) ㉛.

Fast forward wind and rewind

The buttons ⑰ and ⑱ are for winding the tape to the beginning or the end. This winding can be done with two speeds:

1. **Fast forward or fast rewind**

   This mode of transport should **always** be used when considerable lengths of tape have to be wound. It reduces wear of the tape and of the video heads.

   Press the "tape ⏏" button ㉑ (red indicator above it lights up), then press either button ⑰ or ⑱. The tape will be wound rapidly forwards or backwards.

   In the threaded-out state the rewind time of a 2 x 4 hour cassette (VCC 480) is about 2 minutes.

2. **Reduced-speed fast forward wind and rewind**

   In the playback or playback/stop modes (buttons ⑳ or ⑲) the tape is threaded in (red indicator lamp above the "tape ⏏" button ㉑ not lit up). Depress one of the buttons ⑰ or ⑱.

   This winding mode is suitable for locating certain points on the tape (when using it, consult also the description of the **automatic programme finder system,** page 11) as it permits switching backwards and forwards between the playback and wind functions. The time to rewind a VCC 480 cassette is about 5 minutes.

Stopping the Video Tape

There are several ways of stopping the tape on the Video 2 x 4 and these serve various purposes.

In principle all the stop modes can be selected while the tape is running, an exception being the "stop" button during clock-controlled recording.

Stop Button ⑲

This function is intended for short pauses. When it has been depressed, the tape remains in the thread-in configuration, and recording or playback can be started again without a gap.

The stop mode is terminated by depressing one of the running function buttons ⑪, ⑰, ⑱ or ⑳.

If one of these buttons has not been pressed after about 1 min., the recorder will automatically switch to the threaded-out mode ("tape ⏏" button ㉑) from the stop mode (button ⑲) in order to reduce tape wear.

"Tape ⏏" Button ㉑

This mode is suitable for stopping the tape for any length of time. After it has been pressed, the tape is threaded out and withdrawn into the cassette. It will be threaded back in again if recording or playback is resumed. The threading process produces a gap in the display.

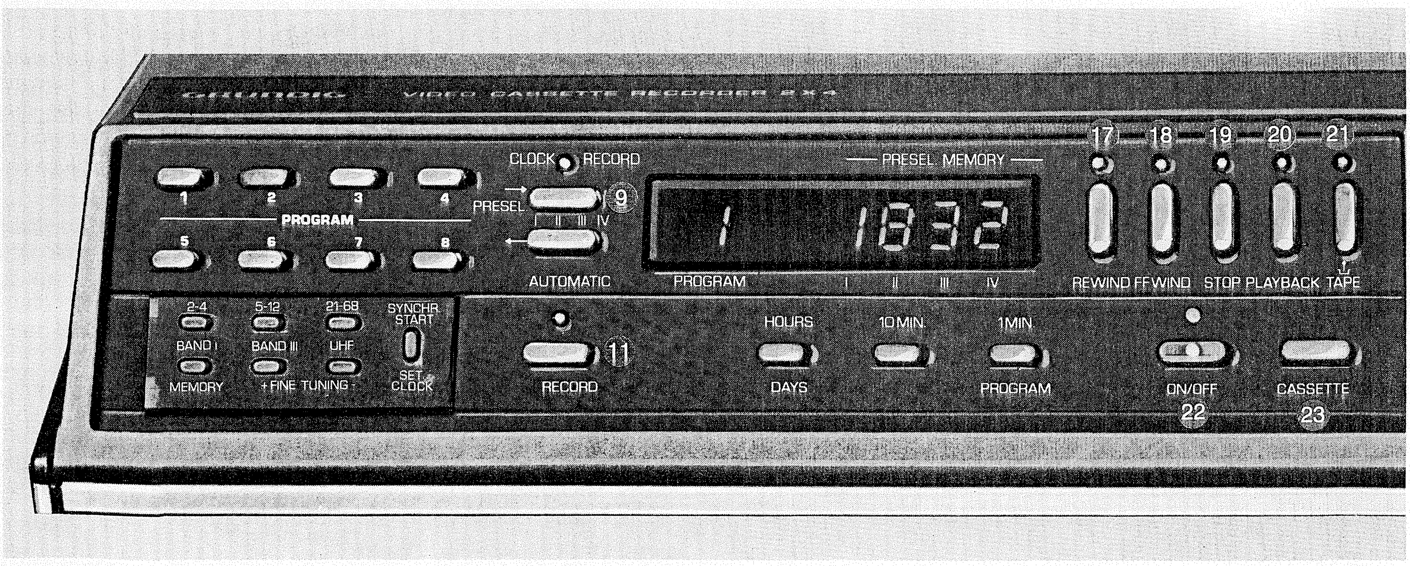
The tape can be started again with one of the running function buttons ⑪, ⑰, ⑱ or ⑳.

"Cassette" Button ㉓

The cassette can only be taken out of the recorder in this mode. When button ㉓ has been depressed, the tape is automatically threaded out, the cassette compartment raised and the compartment flap opened.

Autostop

If the end of the tape is reached during record, playback or forward wind, or the beginning during rewind, the running function is automatically stopped and the tape threaded out.



Operating and Tape-Wind Functions

APF-system (Automatic programme finder system)

Your GRUNDIG Video 2 x 4 video recorder is equipped with a **new type of automatic programme finder system** which will enable you to locate the beginning and end of recordings rapidly and accurately.

For this purpose magnetic marking signals are recorded on the video tape

- at the beginning and end of each individual recording
- when the station is changed while a recording is being made (eg: if you switch from channel 1 to channel 2)
- and at the beginning, the end and each station change during a clock-controlled recording.

When a new recording is made, the marking signals are erased and new ones automatically recorded.

Location of the Start or Finish of a Recording

You should first ensure that,

- the recorder is switched on,
- the mechanical memory device is switched off (button ㉗b not depressed).

You should now proceed as follows:

- Press the playback button ⑳ to thread the tape in (red indicator lamp above the "tape ↥" button ㉑ will go out).
- Depress the rewind ⑰ or forward wind ⑱ button.

When one of these buttons has been depressed, the tape will be wound forward or backwards to the beginning or end of the next recording and stop there automatically.

If this is **not the place** you are looking for, press one off the buttons ⑰ or ⑱ again and the process will be repeated. In this way you will be able to locate the recording you wish to see easily and accurately.

If you want to follow an existing recording with a new one, all you have to do is find the marking signal at the end of the existing recording.

It should be noted that the self-seek device will not operate in the threaded-out configuration (red indicator lamp above "tape ↥" button ㉑ lit up). You should always select this configuration when you want to wind or rewind rather long lengths of tape or when you want to reach the beginning or end of the tape. The beginning and end of the tape are identified by a switching foil.

The **automatic programme finder system** described is an operating aid which is additional to the **mechanical memory device** described in the next section.

Tape Position Memory ㉗

The memory device is for rapidly locating certain points in the programme on the cassette. At the beginning of recording or playback the tape position counter is normally set to "000" with button ㉗a and the "memory" button depressed ㉗b (locked in the down position). When recording or playback is complete and the rewind mode is selected, the tape will automatically stop again when the counter position reading reaches "000".

The mechanical memory function also operates in the "forward wind" mode.

If **the memory device is not in use,** button ㉗b should be **released** (depress it for a second time).

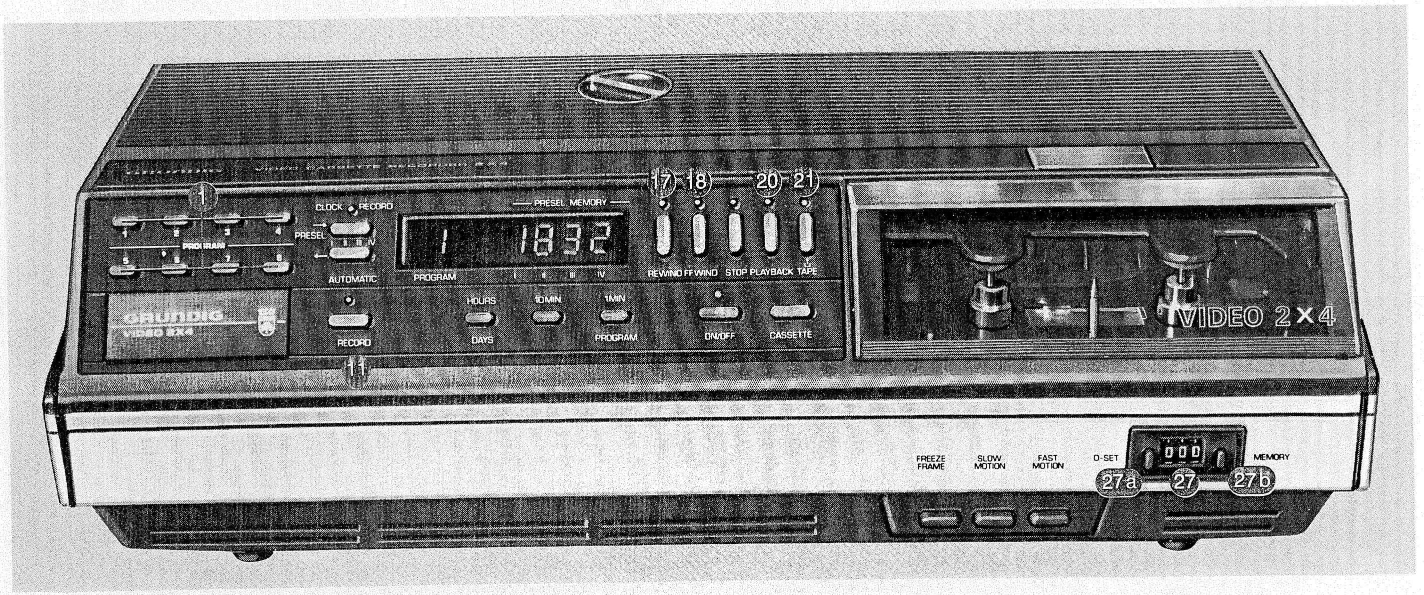
"Record" Button ⑪

The recorder can immediately be used for recording TV programmes with the built-in receiver section.

Before you start recording, you will have to tune to and store stations as described on page 13.

To make a recording, insert a cassette into the cassette compartment with the side on which the recording is to be made upwards. Ensure that the appropriate record lock is set to black (see the section entitled "Video Cassettes").

Depress the required channel button ① and the record button ⑪. If there is already a cassette in the recorder, the button ⑪ can only be selected from the two stop modes already mentioned ("stop" and "tape ↥").



Special Playback Facilities

General

Your new colour TV recorder has facilities for displaying individual frames as stationary pictures ("freeze frame"), and for slow-motion and speeded-up effects.

These functions can only be selected **on playback** and the appropriate button ㉘, ㉙ or ㉚ should be used for this purpose.

The buttons release each other and consequently it is possible to switch from one of the functions to either of the others at any time.

Still picture ("freeze-frame" button ㉘)

The picture is "frozen" by repeated playback of the same frame.

If you want to study a particular scene or picture closely, press the "freeze-frame" button ㉘.

- To terminate the freeze-frame function press the freeze-frame button a second time. This will release the button and normal playback will continue.

N.B. Repeated playback of the same point on the tape during freeze-frame operation increases tape wear. **For this reason the button ㉘ should not be kept depressed for more than 10 minutes.**

Slow-/fast-motion function

As in films, it is possible to "expand" or "compress" time with the slow-and fast-motion facilities in which the speed of playback is altered.

Slow motion (button ㉙)

If you have been unable to follow a particular event, eg: a penalty kick in a football match, proceed as follows:

- Rewind the tape to the required position by pressing the "rewind" button ⑰.
- Press the playback button ⑳.
- Then press the "slow-motion" button ㉙.

The event will now be shown at reduced speed (about 1/3 of the normal tape speed).

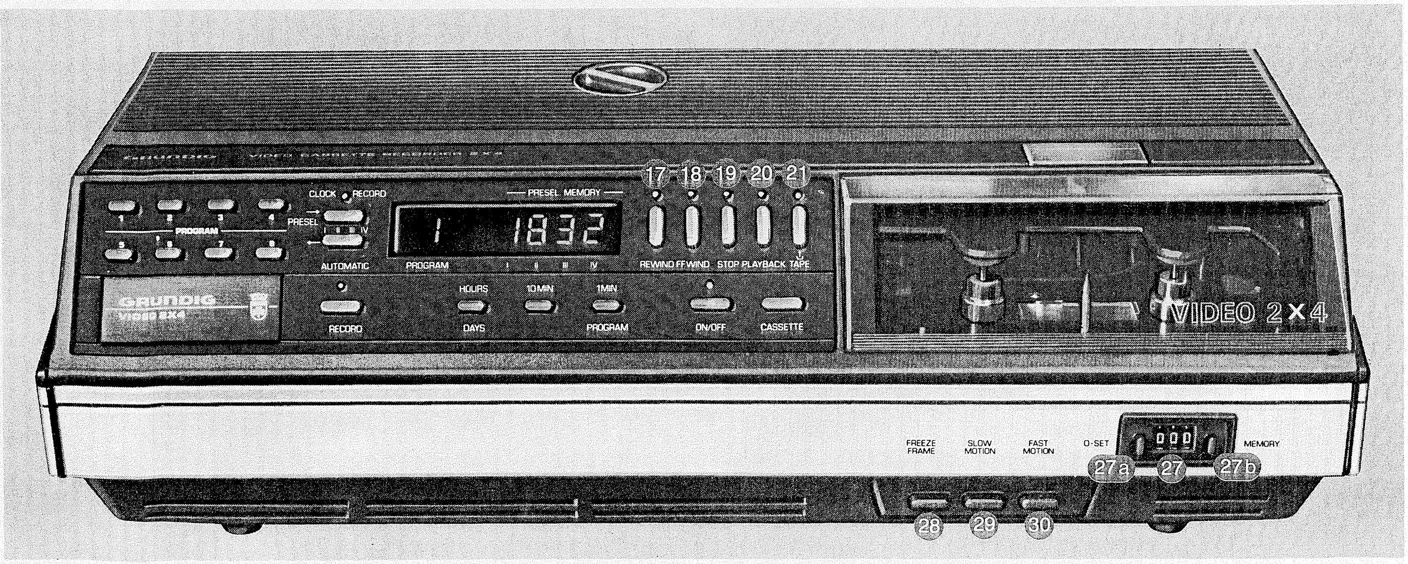
If you want to continue playback at normal speed, press button ㉙ again.

This will release the button and the function will be terminated.

Fast-motion (button ㉚)

This is mainly for use in locating a particular scene during playback. In this mode the tape runs at about three times its normal speed.

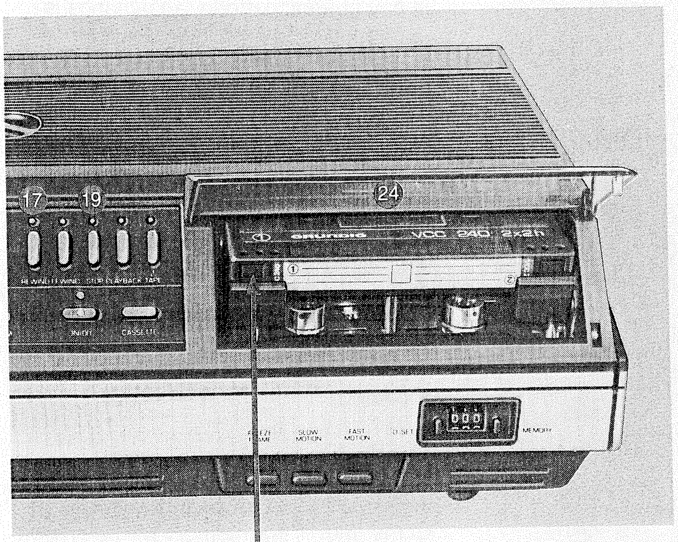
- To select fast motion, press button ㉚. This will cause the picture to run faster.
- By pressing the button a second time the function will be cancelled and playback will be resumed at normal speed.


17
18
19
20
21
CLOCK RECORD
PRESEL
PROGRAM
PRESEL MEMORY
1 1832
AUTOMATIC
PROGRAM
REWIND FF.WIND STOP PLAYBACK TAPE
GRUNDIG
VIDEO 2x4
HOURS
10 MIN
1 MIN
RECORD
DAYS
PROGRAM
ON/OFF
CASSETTE
VIDEO 2x4
FREEZE FRAME
SLOW MOTION
FAST MOTION
0-SET
MEMORY
27a
27
27b
28
29
30

To make recordings from TV broadcasts the Video 2 x 4 must be programmed for the transmitter to be received. The programming has only to be carried out once.

To carry out programming, set the input selection switch ㉟ to "HF" by turning it anti-clockwise.

Switch on the TV set and recorder and select the AV channel on the receiver. Insert an unused cassette in the recorder as already described.
N.B. The record lock on the cassette must be set to off (black field showing).


17
19
24
①
REWIND FF WIND STOP PLAYBACK TAPE
ON/OFF
CASSETTE
FREEZE FRAME
SLOW MOTION
FAST MOTION
MEMORY

Record lock

Open the flap ② to carry out the tuning.

We recommend that you allocate the first channel selection button ① on the recorder to the first TV station (e.g. BBC 1), the second channel selection button ① to the second TV station (e.g. ITV), the third channel selection button ① to the third TV station (e.g. BBC 2) etc.

Depress the record button ⑪ and allocate the buttons ① to your channels.

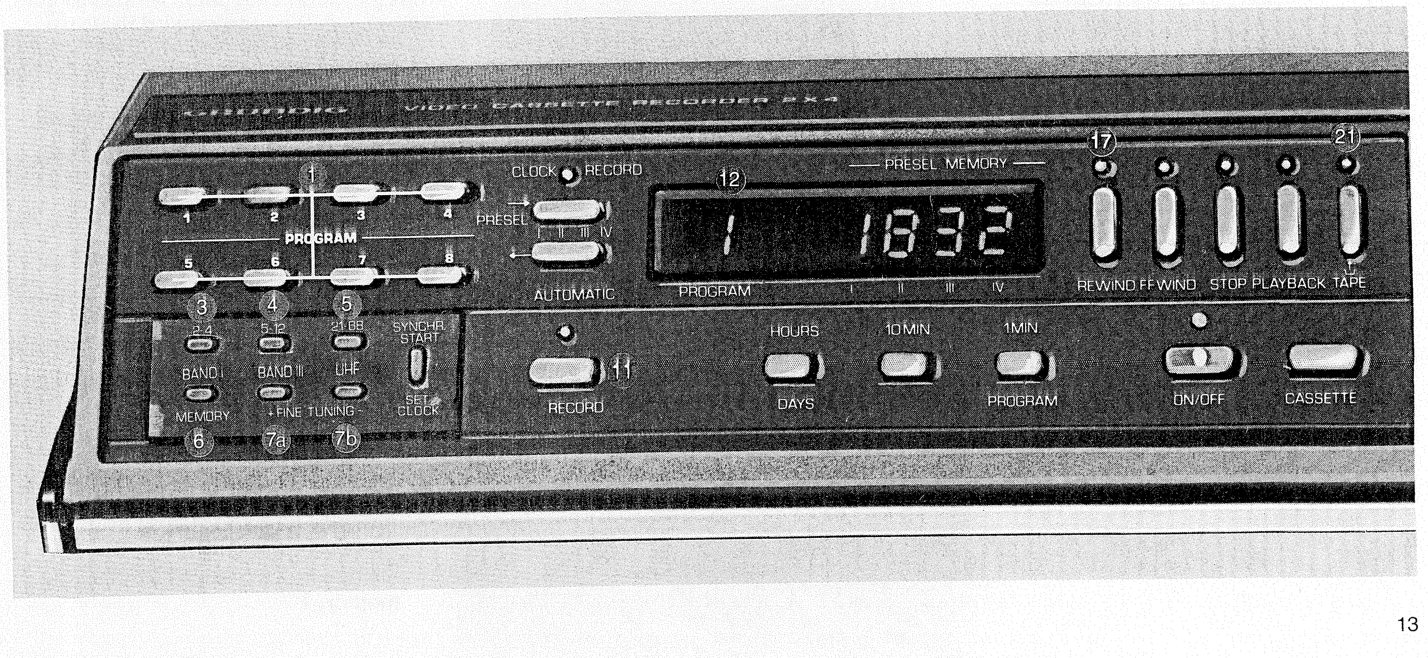
In each case the number of the station selected will be shown in the display ⑫ and the channel can be allocated to it.

Press the station self-seek button of the band in which the desired station is broadcast (button ③, ④ or ⑤).
Compare the quality of the picture received with that normal for the channel concerned (by switching backwards and forwards between the appropriate channel button and the AV setting on the television set).

If the quality of the two pictures is the same, depress the memory button ⑥ on the recorder. If not, repeatedly depress the station self-seek button until you find the correct transmitter for your area.
The fine-tuning buttons ⑦a and ⑦b may be used to harden (+) or soften (−) the picture contours and should be held down untill the picture meets your requirements. When the adjustment procedure is complete, press the memory button ⑥.
Repeat the above procedure until all the TV stations which can be received in your area have been allocated to the appropriate channel selection buttons ①.

After carrying out the programming procedure, stop the video tape by depressing button ㉑ and then rewind if necessary using button ⑰.

You can now record any station you wish.


GRUNDIG
VIDEO CASSETTE RECORDER 2 x 4
1
1
2
3
4
PROGRAM
5
6
7
8
3
4
5
2-4
5-12
21-69
SYNCHR. START
BAND I
BAND III
UHF
MEMORY
+ FINE TUNING -
SET CLOCK
6
7a
7b
CLOCK
RECORD
PRESEL
I II III IV
AUTOMATIC
12
PRESEL MEMORY
1 1832
PROGRAM
I II III IV
11
RECORD
HOURS
DAYS
10 MIN
1 MIN
PROGRAM
17
21
REWIND FF WIND STOP PLAYBACK TAPE
ON/OFF
CASSETTE

Clock and Clock-Controlled Recording

The electronic clock in this recorder enables up to four recordings to be carried out automatically.

You decide for yourself when and how many automatic recordings are to be made. To do this you should feed in the following data for each of the required recordings:

Switch-on time, recording day, TV channel, switch-off time.

The clock setting buttons ⑭, ⑮ and ⑯ are used for this purpose after first depressing button ⑨. The latter can be used with the recorder in any mode, and when it has been pressed, the channel selection buttons ① and channel indicator ⑫ are inoperative. This is indicated by the indicator above button ⑨.

Important!

A 12-second timing applies for all the clock-controlled recording inputs, ie: after depressing any button you have 12 seconds to continue the input, otherwise the recorder will inhibit further input and you will have to start from the beginning again.

Explanation of the Different Displays

The various displays for the different store data should be carefully noted:

Note: The four memories are additionally identified by the roman figures I–IV underneath the display ⑬.

A. Display: dashes instead of figures.

Horizontal dashes instead of figures indicate that the recorder is waiting for fresh data.

B. Switch-on time

There are no illuminated dots between the four figures.

C. Switch-off time

There is an illuminated dot to the right of each of the four figures.

D. Switch-on day

The letter, number or dash above I indicates the switch-on day.

Dash = input inhibited, recording not accepted.
H = today
1 = tomorrow
2 = the day after tomorrow, etc. up to a maximum of 9 days in advance.

E. Station number

The number on the right of the letter P indicates the station required (1, 2, etc. up to a maximum of 8).

F. Identification of the Pre-select memory

The four pre-select memory locations are indicated by one of the four digit positions ⑬ flashing.

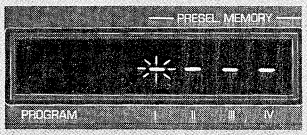
When the **first position** flashes the display is only showing the data in **pre-select memory I.**

When the **second position** is flashing, the display only shows the data in the **pre-select memory II.**

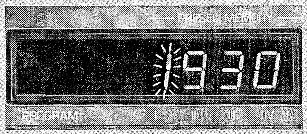
When the **third position** is flashing, the display only shows the data in the **pre-select memory III.**

When the **fourth position** is flashing, the display only shows the data in the **pre-select memory IV.**

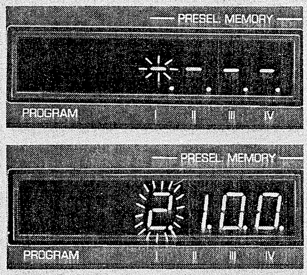
A.


PRESEL. MEMORY
PROGRAM
I
II
III
IV

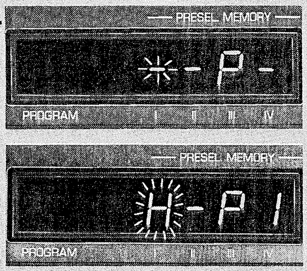
B.


PRESEL. MEMORY
1930
PROGRAM
I
II
III
IV

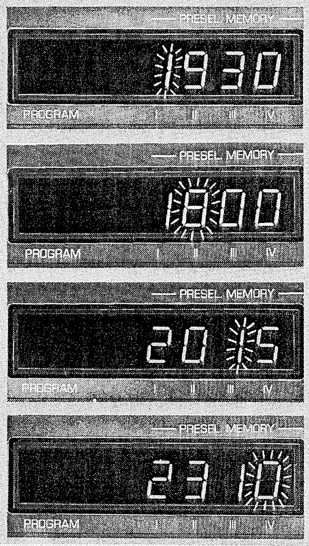
C.


PRESEL. MEMORY
PROGRAM
I
II
III
IV
PRESEL. MEMORY
2 1.0.0.
PROGRAM
I
II
III
IV

D. E.


PRESEL. MEMORY
- P -
PROGRAM
I
II
III
IV
PRESEL. MEMORY
H - P 1
PROGRAM
I
II
III
IV

F.


PRESEL. MEMORY
1930
PROGRAM
PRESEL. MEMORY
PROGRAM
PRESEL. MEMORY
20 15
PROGRAM
PRESEL. MEMORY
23 10
PROGRAM
I
II
III
IV

Explanatory notes on programming

Switch on the video recorder with the on/off button ㉒ (yellow indicator lamp lights up).

The clock-controlled recording button ⑨ will accept instructions with the recorder in any operating mode. Acceptance is confirmed by the red indicator light coming on. Commands will not be accepted if the record lock on the cassette is on (red area visible on the left hand side of the cassette), or if the end of the tape has been reached. The 8 station selection buttons ① are now inoperative and the station indicator ⑫ in the display will go out. The switch-on and switch-off times, pre-selected day and channel, as well as the 4 memory locations are indicated by the display in special ways, as already described. Incomplete programming information will not be accepted.

Example:

If, when programming memory III, you forget to feed in, for example, the day, **all** the data in this memory will be erased. The full data will have to be fed in again.

Before starting programming or clock-controlled recording, the following points should be noted:

The programming data can be fed in any time sequence. The built-in microprocessor will sort the data into the correct sequence. **We recommend that you write down the input data beforehand.**

Consecutive recordings should not overlap. In the event of an overlap, the second programme will always be recorded since the next switch on time has priority over the preceding one.

Any overlap will be corrected by the microprocessor in the programming procedure itself and indicated by the preceding switch-off time (see example).

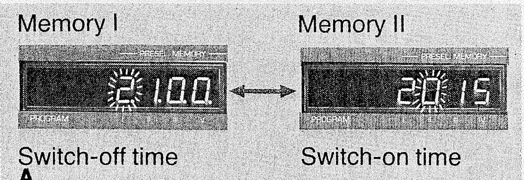
Example:

A. Memory indication during the input

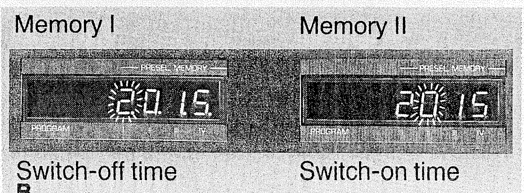
The selected switch-on-time of memory II lies in front of the switch-off-time of memory I.

B. Memory indication after correction

The switch-on-time of memory II advances as a switch-off-time to memory I.


Memory I
Memory II
PRESEL. MEMORY
2 1.0.0.
PROGRAM
PRESEL. MEMORY
20 15
PROGRAM
Switch-off time
Switch-on time

A.


Memory I
Memory II
PRESEL. MEMORY
2.0. 1.5.
PROGRAM
PRESEL. MEMORY
20 15
PROGRAM
Switch-off time
Switch-on time

B.

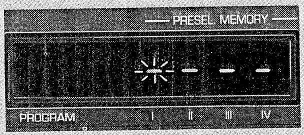
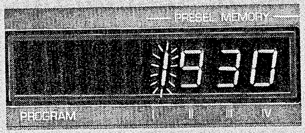
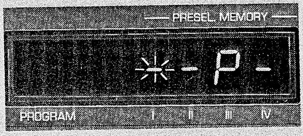
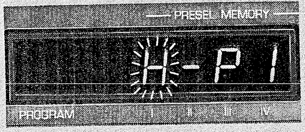
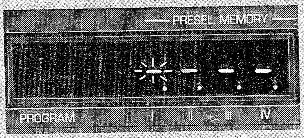
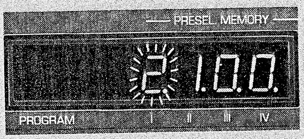
Important!

A 12-second timing applies for all the clock-controlled recording inputs, ie: after depressing any button you have 12 seconds to continue the input, otherwise the recorder will inhibit further input and you will have to start from the beginning again.

To Start Programming:

Switch on the video recorder with the on/off button ㉒ (yellow indicator lamp comes on). Insert a cassette with sufficient playing time, ensuring that the record lock is off.

Programming Table: example for **"Pre-select I" memory** only.

Input Sequence	Display	Explanatory Notes
Depress button ⑨	 PRESEL MEMORY PROGRAM I II III IV	To identify pre-select I the first position flashes. Any figures already present may be replaced by new ones.
Feed in the switch-on time with buttons ⑭, ⑮ and ⑯	 PRESEL MEMORY 930 PROGRAM I II III IV	
Depress the button ⑨ for a **second** time	 PRESEL MEMORY - P - PROGRAM I II III IV	Any figures already present may be replaced by new ones.
Feed in the day and channel with buttons ⑭ and ⑯	 PRESEL MEMORY H - P 1 PROGRAM I II III IV	**Day pre-selection possibilities:** Horizontal dash = recording inhibited input awaited H = today 1 = tomorrow . . . . 9 = 9 days later
Depress button ⑨ for a **third** time	 PRESEL MEMORY PROGRAM I II III IV	
Feed in the switch-off time with buttons ⑭, ⑮ and ⑯	 PRESEL MEMORY 2 1.0.0. PROGRAM I II III IV	Any figures present may be replaced by new ones. If, however, the horizontal dashes are left unchanged, i.e. no switch-off time is fed in, the recording will run to the end of the tape.

Programming for More than One Broadcast and Correction

Programming for more than one Broadcast

Feed information into the first store as shown in the preceding table. After feeding the switch-off time into the pre-select memory I, continue programming by depressing the "pre-select →" button ⑨ **again.**

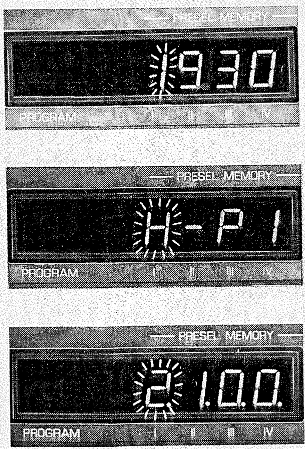
The second position or figure in the display will now flash, ie: data can now be fed into the pre-select memory II in the same way as for the pre-select memory I (see table). The procedure for the pre-select memory III and IV is analogous.

When all the memories have been allocated as required, the data in pre-select I, II, III and IV, sorted into the correct time order and corrected, will start to be repeatedly shown in sequence in the display 12 sec. after the final data input.

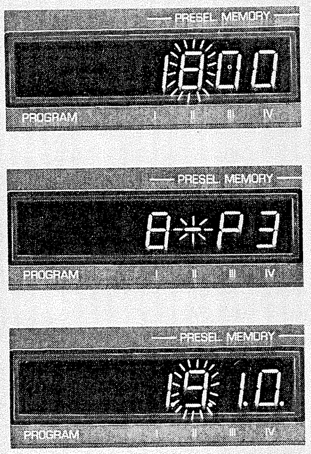
There is a short period when the display is blank between the displaying of the data in each of the pre-select memories. Your recorder will start and finish the clock-controlled recordings at the pre-selected times.

If no further data are fed into the 3 subsequent pre-select memories, the display will start to run through them after 12 seconds and display the stored data in sequence. The sequential display process can be interrupted at any time without data being lost by depressing the "pre-select →" ⑨ or "pre-select ←" ⑩ button (this is of importance for making corrections or feeding in additional data).

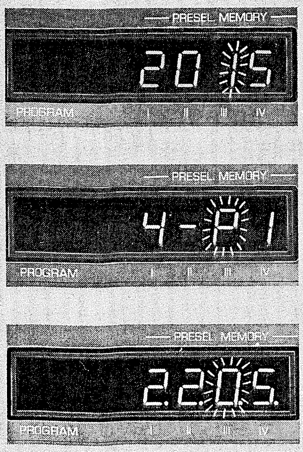
Memory I



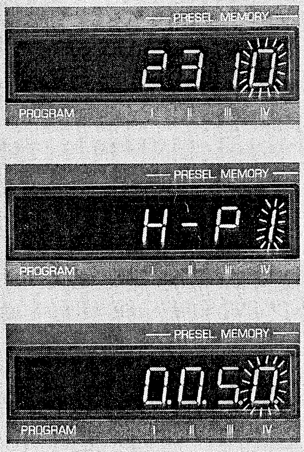
Memory II



Memory III



Memory I V



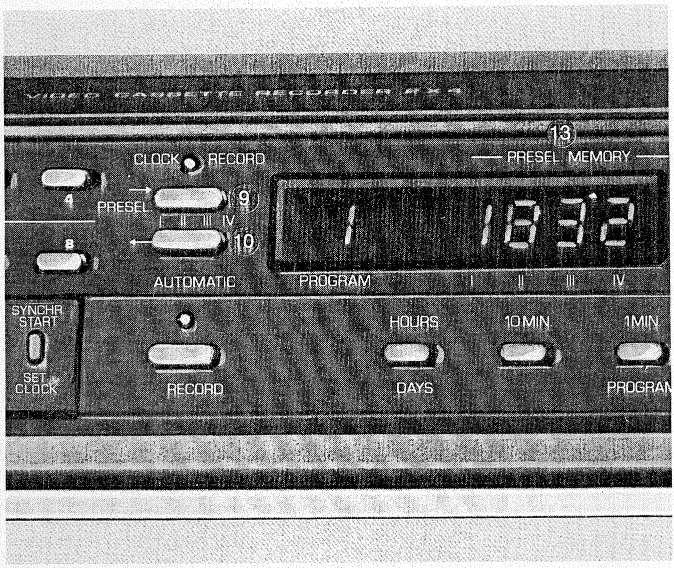
Correction of Data in the Memories

1. Any clock-controlled recording which has been completed will automatically be erased from the pre-select memory, ie: the subsequent pre-select times will move forward so that memory locations are made available for fresh data while a recording is being made.
2. Incorrect programming data can be corrected or alterations made by depressing the "Pre-select →" ⑨ or "Pre-select ←" ⑩ button even if clock-controlled recording is in progress.

   When the "pre-select →" ⑨ or "pre-select ←" ⑩ button is depressed, the sequential display will be stopped. All the data fed in can now be recalled by depressing one of these two buttons for checking and, if necessary, correction. As soon as the display appears in ⑬, the corrections can be made.

Example:

By repeatedly pressing the button ⑨ you can, for example, switch through each of the memories in sequence from switch-on time I (memory I) to switch-off time IV (memory IV). If the button ⑩ is used, this procedure can be reversed, ie: you can step through the data from switch-off time IV to switch-on time I.



3. If a pre-select time (switch-on time, day and programme) is fed in which is before the actual time, clock-controlled recording will be started **immediately** by the recorder after about 12 seconds.

Premature Termination of a Clock-Controlled Recording

If a clock-controlled recording is in progress, you may terminate it by depressing the "tape ⏏" ㉑ or "cassette" ㉓ button.

Displaying the Time of Day After Programming

If you wisch to know the time of day after completing programming, depress the "set clock" button ⑧. The time of day can then be read for a period of 12 seconds, after which the display will automatically return to displaying the programmed information in sequence.

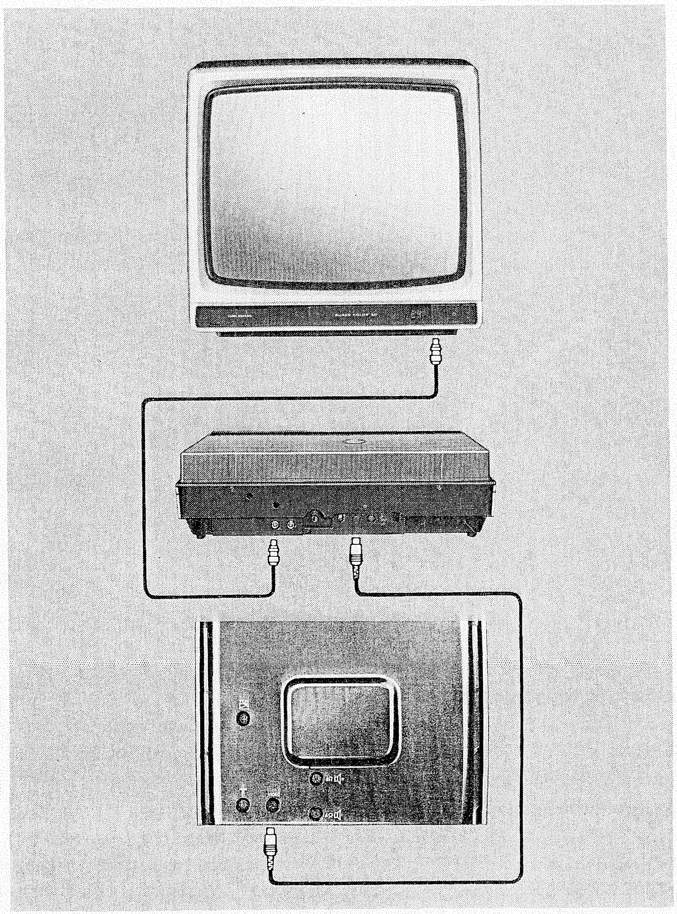
Recording from “External” Picture and Sound Sources

Recording from TV sets, other video recorders or electronic video cameras.

1. Recording from a TV set

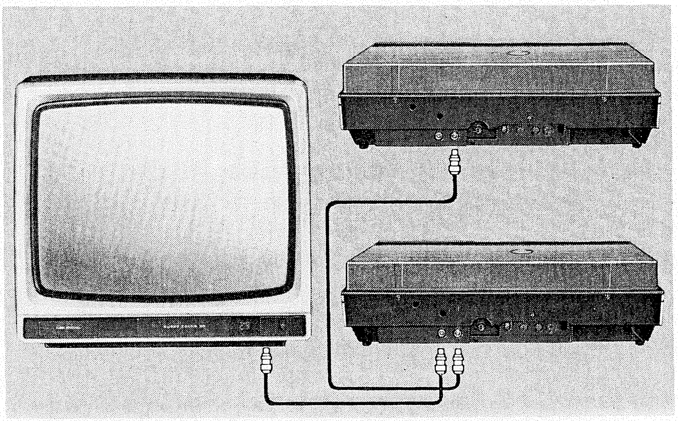
Set the input switch ㉟ of the recorder to “AV”. The station indicator ⑫ shows an ,, A ''. Connect the recorder to the TV set by means of the video cable I.

Select the required programme on the TV set and depress the record button ⑪ on the recorder. The picture seen on the screen will be recorded.



2. Copying of Cassettes

TV programmes can be copied from one video cassette to another and this can be done either in the AV or HF mode.



a) HF copying

For this purpose you will have to set up the recorders as follows:

Connect the aerial output socket ㉜ of the recorder making the recording to the aerial socket of the TV set and use the latter as a monitor.

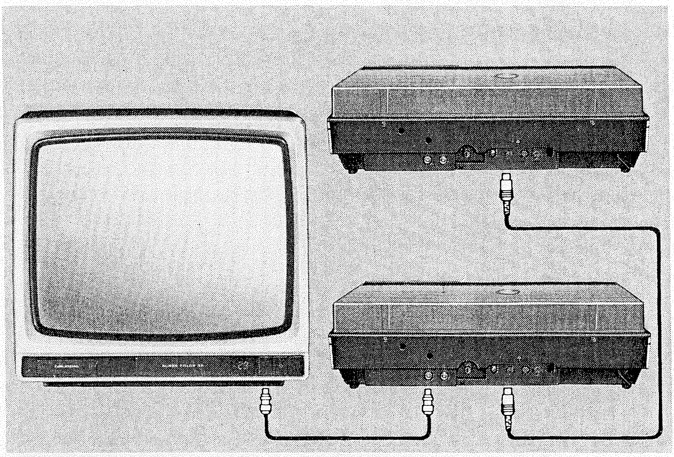
Connect the aerial input socket ㉝ of this recorder to the aerial output socket of the second recorder.

Set the input selector switch ㉟ to “HF”.

Switch the first recorder to record, and the second to playback and tune one of the channels of the first recorder (eg: 8) to the second recorder so that the picture the latter produces is satisfactory.

Stop both recorders and rewind both cassettes to the start or to the desired tape position.

Set the first recorder again to record and the second to playback.



b) AV Copying

Note. Set the input selection switch ㉟ to “AV”. The station indicator ⑫ shows an ,, A ''.

Link the two recorders together with Video Cable I. The aerial output socket ㉜ of the recorder on which the recording is to be made must be connected to the input socket of the TV set so that the latter can be used as a monitor (the TV set must have been matched to the recorder). Start both recorders simultaneously by pressing button ⑪ on the one making the recording and playback button on the one playing back.

3. Camera Recordings

Making your own TV recordings in picture and sound will enable you to use the many facilities of the video recorder to the full.

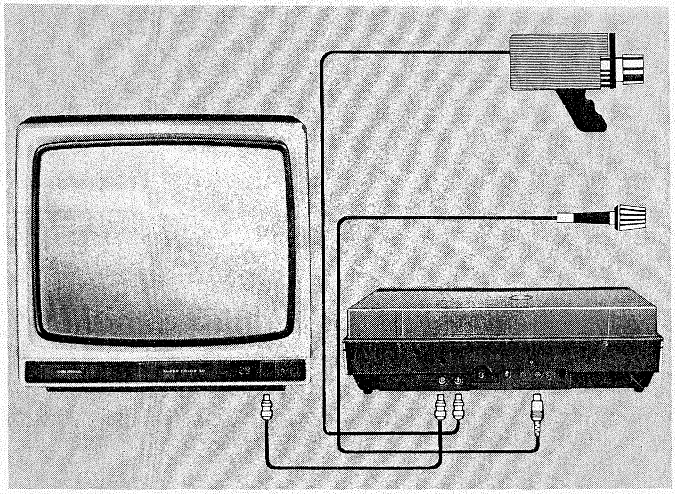
a) Cameras with HF Output

Unplug the aerial cable from the aerial input socket ㉝ of the recorder and replace it with the HF output cable of the camera. Tune the recorder to the HF output of the camera.

If you are using a separate microphone for recording the sound, connect it to the "micro" socket ㊲.

Set the input selection switch ㉟ to "HF".

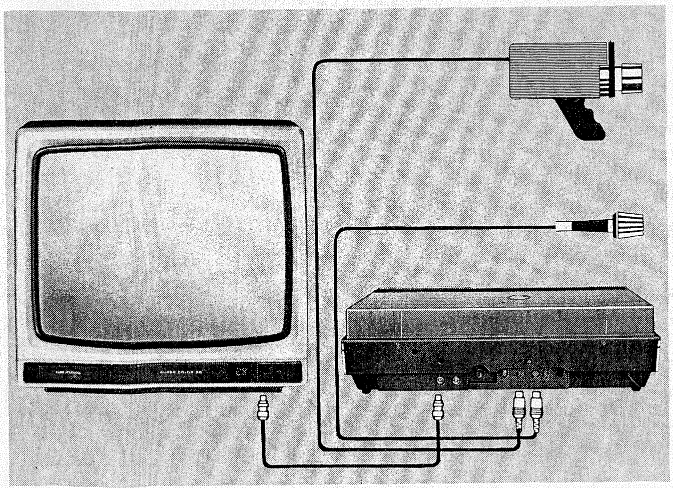
Depress the record button ⑪ when you wish the recording to start.



b) Cameras with AV Output

For this purpose the GRUNDIG colour cameras FAC 1700, FAC FAC 1800 and FAC 1900, and the GRUNDIG FA 1007 black-and-white camera are especially suited.

Plug the camera cable into the AV socket ㊱ of the recorder and set the input selection switch ㉟ to ,,A'' (the station indicator ⑫ shows an ,, A ''). A colour TV set may be connected to the aerial output socket ㉜ of the recorder as a monitor. The recorder will record picture information provided by the camera (further details on recording with a camera will be found in the appropriate camera operating instructions).



4. Recording from other sound sources

To record the sound when recording from a camera, when copying a cassette or when making a normal TV recording you may connect an external microphone to the "micro" socket ㊲. This gives you facility for recording your own commentary.

To make the sound recording the microphone **must** be connected before the recorder button ⑪ is pressed and the sound can **only** be recorded at the same time as the picture; **dubbing at a later date is not possible.**

If things go wrong . . .

This page gives you remedies for some types of fault. If you encounter a fault which cannot be eliminated by the methods indicated, you must consult your **dealer.**

For information maintaining your recorder you should also read page 21.

Under no circumstances should you attempt to open the video recorder yourself as GRUNDIG does not accept any reponsibility for any damage which may result.

Symptom	**Cause**	**Remedy**
TV sound not recorded	Microphone connected	Remove microphone plug from microphone socket
Playback instruction not accepted	Cassette at end of tape	Rewind cassette
TV set displays no picture on playing back a recording without AV cable	1. TV set not in AV programme setting 2. Channel setting control on recorder has been moved	1. Switch TV set to AV programme setting 2. Set channel setting control to correct channel
Rewind instruction not accepted	Cassette is already at beginning of tape	———
Rewind instruction accepted, but green indicator lamp goes out again immediately (function not operative)	1. Memory button is depressed and tape position counter is at 000 2. Automatic programme finder system responds	1. Release memory button 2. Depress button ⑰ once again
Fast forward wind instruction not accepted	Cassette is at the end of the tape	———
Fast forward wind is accepted, but green indicator lamp goes out again immediately (function not operative)	1. Memory button is depressed and tape position counter is at 000 2. Automatic programme finder system responds	1. Release memory button 2. Depress button ⑱ once again
Cassette does not fully wind forward or back	1. Memory button is depressed and tape stops automatically at counter position 000 2. Automatic programme finder system responds	1. Release memory button 2. Depress button ⑰ or ⑱ once again
8888 flashing	Mains supply has been interrupted	Reset time and, if required, re-programme for automatic recording
Indicator above "tape ⏏" button flashes a) In any function where the tape is running b) Only in function "record" (possibly during station self-seek)	a) Tape jam b) Headwheel protection circuit has operated	a) Press "cassette" button, remove cassette and examine b) Switch off recorder for approx. 1 min. check aerial connection. Then "record" and check station in memory.
Record instruction not accepted	1. No cassette inserted 2. Record lock on cassette is on (red area visible). 3. Cassette at end of tape 4. Cassette switched to playback, rewind or fast forward wind mode	1. Insert cassette 2. Switch off record lock on cassette (red area should not be visible) 3. Rewind cassette or turn over 4. First depress "Stop" or "tape" button and then the record button
Record instruction is accepted but no monitor picture appears on the television set	1. HF/AV Input selection switch incorrectly in "AV" position 2. No station has been tuned to and stored in the recorder 3. The TV set is not in the "AV" programme position. 4. The channel setting switch on the recorder has been moved	1. Set HF/AV input selection switch to "HF" 2. Locate and store station 3. Switch TV set to AV programme position 4. Adjust channel setting control to correct channel (see page 9)
Markedly worse picture quality when monitoring than for direct reception (Moiré)	Interaction of the station and the output channel of the recorder	Check station tuning (see page 13), tune to a different output channel (see page 9)
Automatic clock-recording instructions not accepted	1. No cassette inserted 2. Record lock on cassette on (red area visible) 3. Cassette at end of tape 4. Time not set (clock flashing)	1. Insert cassette 2. Switch off record lock on cassette (black area visible) 3. Rewind cassette or insert new one 4. Set time on clock (see page 9)

Technical Data

The technical data have been determined in accordance with DIN measurement specifications.

System:	"Video 2000", 2 rotating video heads, inclined track recording with 186° wrap round.
Mains:	240 V ± 10 %, 50/60 Hz
Power consumption:	Approx. 60 W max.
Weight:	14.5 kg
Dimensions:	Width = 590 mm, height = 167 mm, depth = 320 mm.
Operating position:	Horizontal (max. slope = 20°).
Ambient temperature:	+ 5° to + 40° C
Relative humidity:	up to 80 %
Colour standard:	CCIR PAL, 625 lines
Visible resolution:	Approx. 3 MHz
Audio bandwidth:	40 Hz–10 kHz
Cassette dimensions:	183 mm x 26 mm x 110 mm
Playing time:	VCC 120 cassette: 2 x 1 h VCC 240 cassette: 2 x 2 h VCC 360 cassette: 2 x 3 h VCC 480 cassette: 2 x 4 h
Fast forward & rewind times (threaded out):	VCC 120 cassette: 35 sec VCC 240 cassette: 60 sec VCC 360 cassette: 100 sec VCC 480 cassette: 130 sec
Forward & rewind times (threaded in):	VCC 120 cassette: 70 sec VCC 240 cassette: 130 sec VCC 360 cassette: 205 sec VCC 480 cassette: 270 sec
Tape:	½" (12.7 mm) magnetic video tape
Tape speed:	24.42 mm/sec ± 0.4 %
Relative speed:	Video head/tape 5.08 m/sec
Video track:	Width = 22.55 μm
Track spacing:	22.55 μm centre-to-centre (without guard track)
Sound track:	Width = 0.65 mm
Aerial input:	Coaxial B DIN 45325 socket, 75 Ω asymmetric, for colour TV channels 2–4 (50–70 MHz), 5–12 (175–225 MHz), and 21–68 (470–860 MHz). Input voltage ≦ 25 mV (sync. level), no transmission loss with recorder plugged into mains.
Aerial output: (modulator)	S DIN 45325 plug, 75 Ω asymmetric, modulator on UHF channel 36 (591.25 MHz ± 0.5 MHz) (can be set to channels 32–43). Output voltage: 5 mV r.m.s. for sync. level into 75 Ω.
Remote-control socket:	11-pin multiway connector covering, record, playback, stop, forward wind, rewind and tape ("re-thread" tape into cassette).
Microphone socket:	Input pins 1 + 4: 0.5–50 mV r.m.s. (1 kHz) Input impedance 47 kΩ
AV socket:	**Input:**

Pin 1:	———
Pin 2:	Video signal $1\ V_{pp}\ ^{+2}_{-4}$ dB into 75 Ω
Pin 3:	Chassis
Pin 4:	Audio signal 100 mV – 2 V r.m.s. (30 Hz – 15 kHz) input impedance 22 kΩ
Pin 5:	———

Output:

Pin 1:	+ 12 V/100 mA switching voltage (via protective diode). Disconnected during record in AV mode
Pin 2:	Video signal $1\ V_{pp}$ ± 2 dB into 75 Ω
Pin 3:	Chassis
Pin 4:	Audio signal 1 V r.m.s. (30 Hz–15 kHz) Adjustable to 0.1–1.9 V r.m.s. Output impedance 1 kΩ
Pin 5:	Supply voltage for camera etc. + 12 V/800 mA max (via protective diode). Available if recorder is switched on.

Subject to alteration

Maintenance of the VIDEO 2 x 4

The overall design of the recorder ensures maintenance-free operation over a prolonged period.

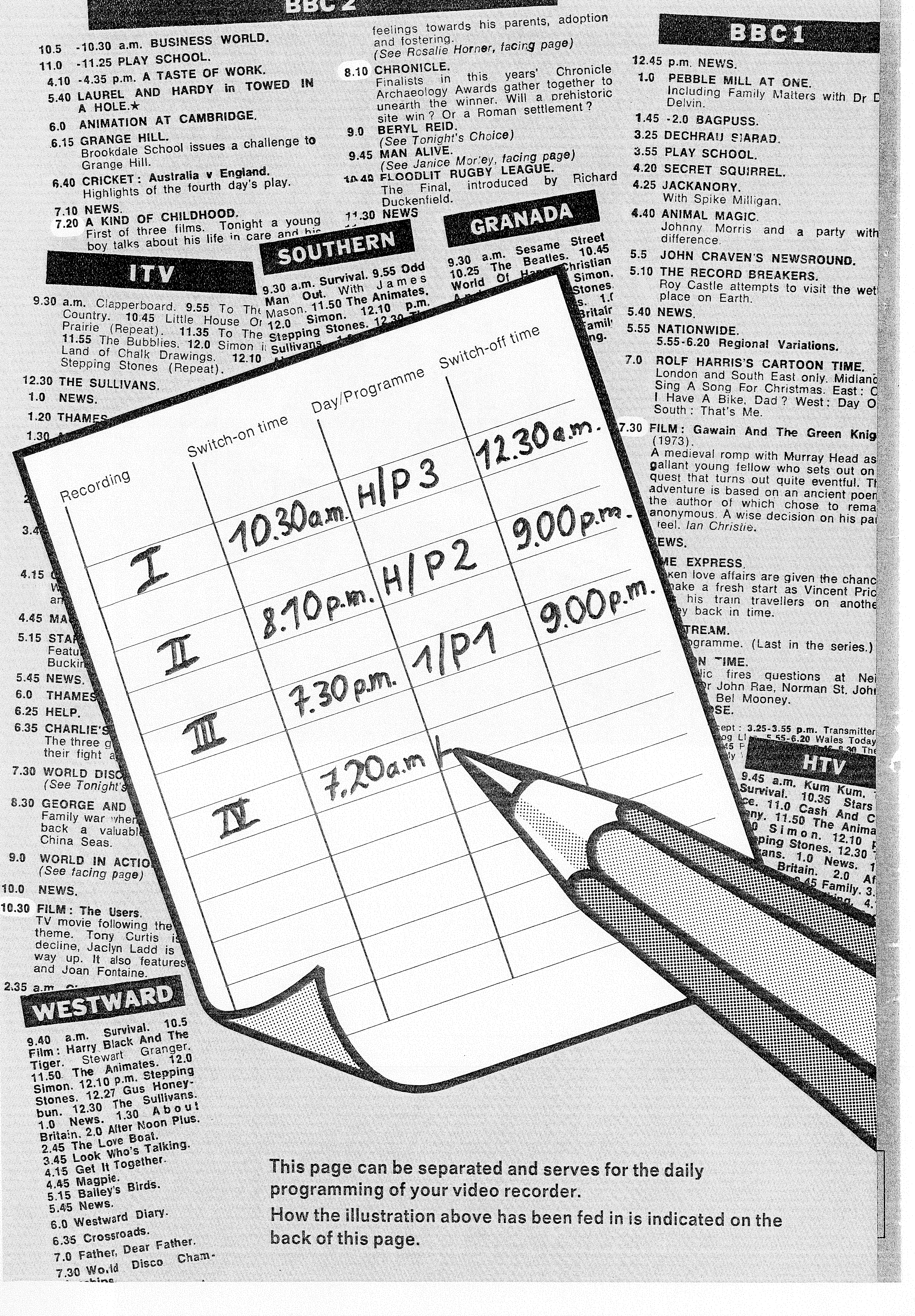
If however, the quality of the picture on playback should deteriorate, use may be made of the **GRUNDIG Cleaning Cassette VCC-R 1** (Order No. G · MQ 75-00).

This cassette will remove any contamination on the video, r/p and erase heads deposited by the tape. To use, put the cassette into your recorder and depress the playback button. **The tape runs for approx. 15 minutes.**

If this does not improve the playback picture, you should consult your dealer.

Under no circumstances should cleaning sprays be used as these may damage your recorder and your video cassettes.

Reinigungs-Cassette:
Cleaning Cassette:
Zum Reinigen der Videoköpfe Cassette einmal in Stellung Wiedergabe (ca. 15 Minuten) durchlaufen lassen.
For cleaning the video heads, select "Playback" and let the cleaning tape run (approx. 15 minutes).
SYSTEM VIDEO 2000
GRUNDIG
Made in Germany
Reinigungs-Cassette
Cleaning Cassette
Cassette de nettoyage
Cassette detergente



Recording	Switch-on time	Day/Programme	Switch-off time
I	10.30a.m.	H/P3	12.30a.m.
II	8.10p.m.	H/P2	9.00p.m.
III	7.30p.m.	1/P1	9.00p.m.
IV	7.20a.m		

BBC 2

10.5 -10.30 a.m. BUSINESS WORLD.
11.0 -11.25 PLAY SCHOOL.
4.10 -4.35 p.m. A TASTE OF WORK.
5.40 LAUREL AND HARDY in TOWED IN A HOLE.★
6.0 ANIMATION AT CAMBRIDGE.
6.15 GRANGE HILL. Brookdale School issues a challenge to Grange Hill.
6.40 CRICKET: Australia v England. Highlights of the fourth day's play.
7.10 NEWS.
7.20 A KIND OF CHILDHOOD. First of three films. Tonight a young boy talks about his life in care and his feelings towards his parents, adoption and fostering. (See Rosalie Horner, facing page)
8.10 CHRONICLE. Finalists in this years' Chronicle Archaeology Awards gather together to unearth the winner. Will a prehistoric site win? Or a Roman settlement?
9.0 BERYL REID. (See Tonight's Choice)
9.45 MAN ALIVE. (See Janice Morley, facing page)
10.40 FLOODLIT RUGBY LEAGUE. The Final, introduced by Richard Duckenfield.
11.30 NEWS

BBC1

12.45 p.m. NEWS.
1.0 PEBBLE MILL AT ONE. Including Family Matters with Dr D Delvin.
1.45 -2.0 BAGPUSS.
3.25 DECHRAU SIARAD.
3.55 PLAY SCHOOL.
4.20 SECRET SQUIRREL.
4.25 JACKANORY. With Spike Milligan.
4.40 ANIMAL MAGIC. Johnny Morris and a party with difference.
5.5 JOHN CRAVEN'S NEWSROUND.
5.10 THE RECORD BREAKERS. Roy Castle attempts to visit the wet place on Earth.
5.40 NEWS.
5.55 NATIONWIDE. 5.55-6.20 Regional Variations.
7.0 ROLF HARRIS'S CARTOON TIME. London and South East only. Midland Sing A Song For Christmas. East: I Have A Bike, Dad? West: Day O South: That's Me.
7.30 FILM: Gawain And The Green Knig (1973). A medieval romp with Murray Head as gallant young fellow who sets out on quest that turns out quite eventful. Th adventure is based on an ancient poem the author of which chose to rema anonymous. A wise decision on his pa feel. Ian Christie.
EWS.
ME EXPRESS. ken love affairs are given the chanc make a fresh start as Vincent Pric his train travellers on anothe ey back in time.
TREAM. ogramme. (Last in the series.)
N TIME. lic fires questions at Nei r John Rae, Norman St. Joh Bel Mooney.
SE.
cept: 3.25-3.55 p.m. Transmitter og Ll 5.55-6.20 Wales Today

ITV

9.30 a.m. Clapperboard. 9.55 To The Country. 10.45 Little House On Prairie (Repeat). 11.35 To The 11.55 The Bubblies. 12.0 Simon i Land of Chalk Drawings. 12.10 Stepping Stones (Repeat).
12.30 THE SULLIVANS.
1.0 NEWS.
1.20 THAMES
1.30
3.4
4.15
4.45 MA
5.15 STA Featu Buckin
5.45 NEWS.
6.0 THAMES
6.25 HELP.
6.35 CHARLIE'S The three g their fight a
7.30 WORLD DISC (See Tonight's
8.30 GEORGE AND Family war when back a valuabl China Seas.
9.0 WORLD IN ACTIO (See facing page)
10.0 NEWS.
10.30 FILM: The Users. TV movie following the theme. Tony Curtis is decline, Jaclyn Ladd is way up. It also features and Joan Fontaine.
2.35 a.m.

SOUTHERN

9.30 a.m. Survival. 9.55 Odd Man Out. With James Mason. 11.50 The Animates. 12.0 Simon. 12.10 p.m. Stepping Stones. 12.30 Sullivans.

GRANADA

9.30 a.m. Sesame Street 10.25 The Beatles. 10.45 World Of Christian Simon. Stones. Britain Famil

WESTWARD

9.40 a.m. Survival. 10.5 Film: Harry Black And The Tiger. Stewart Granger. 11.50 The Animates. 12.0 Simon. 12.10 p.m. Stepping Stones. 12.27 Gus Honeybun. 12.30 The Sullivans. 1.0 News. 1.30 About Britain. 2.0 After Noon Plus. 2.45 The Love Boat. 3.45 Look Who's Talking. 4.15 Get It Together. 4.45 Magpie. 5.15 Bailey's Birds. 5.45 News. 6.0 Westward Diary. 6.35 Crossroads. 7.0 Father, Dear Father. 7.30 World Disco Cham-

HTV

9.45 a.m. Kum Kum. Survival. 10.35 Stars ce. 11.0 Cash And C ny. 11.50 The Anima Simon. 12.10 ping Stones. 12.30 ans. 1.0 News. Britain. 2.0 Af 45 Family.

This page can be separated and serves for the daily programming of your video recorder.

How the illustration above has been fed in is indicated on the back of this page.

IMPORTANT!

To enter the data the **clock** must been set, a **cassette** inserted (e.g. side 1 with left-hand reel full) and the **record lock** set to "off" (black field showing).

Proceed as follows:

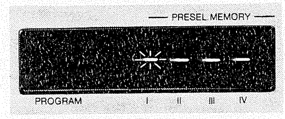
Display

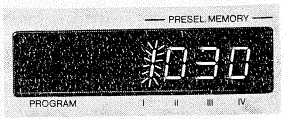
Before input

After input

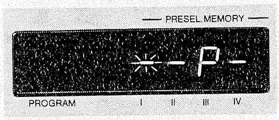
PRE-SELECTION MEMORY I

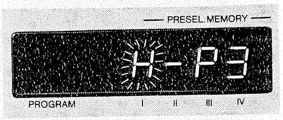
1. **Depress button "Pre-selection →"**
   Feed in the switch-on time "10.30"


PRESEL MEMORY
PROGRAM
I II III IV

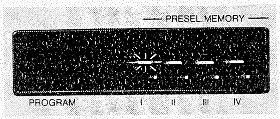

PRESEL MEMORY
1030
PROGRAM
I II III IV

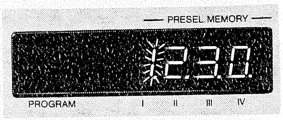
2. **Depress button "Pre-selection →"**
   Feed in the day "H" and the programme "P3"


PRESEL MEMORY
P
PROGRAM
I II III IV


PRESEL MEMORY
H-P3
PROGRAM
I II III IV

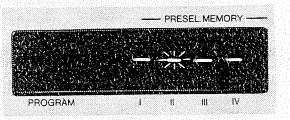
3. **Depress button "Pre-selection →"**
   Feed in the switch-off time "12.30"

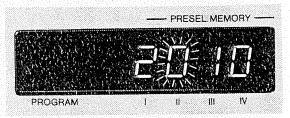

PRESEL MEMORY
PROGRAM
I II III IV


PRESEL MEMORY
1230
PROGRAM
I II III IV

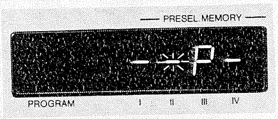
PRE-SELECTION MEMORY II

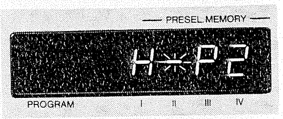
1. **Depress button "Pre-selection →"**
   Feed in the switch-on time "20.10"


PRESEL MEMORY
PROGRAM
I II III IV

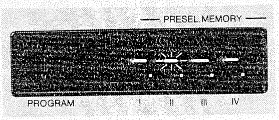

PRESEL MEMORY
2010
PROGRAM
I II III IV

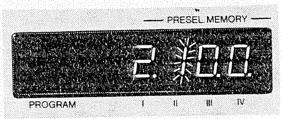
2. **Depress button "Pre-selection →"**
   Feed in the day "H" and the programme "P2"


PRESEL MEMORY
P
PROGRAM
I II III IV


PRESEL MEMORY
H P2
PROGRAM
I II III IV

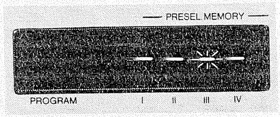
3. **Depress button "Pre-selection →"**
   Feed in the switch-off time "21.00"

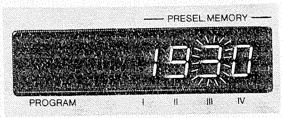

PRESEL MEMORY
PROGRAM
I II III IV


PRESEL MEMORY
2100
PROGRAM
I II III IV

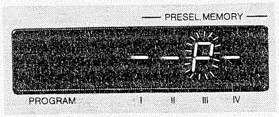
PRE-SELECTION MEMORY III

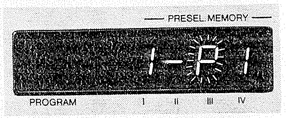
1. **Depress button "Pre-selection →"**
   Feed in the switch-on time "19.30"


PRESEL MEMORY
PROGRAM
I II III IV

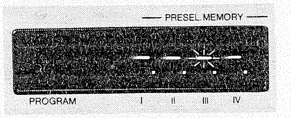

PRESEL MEMORY
1930
PROGRAM
I II III IV

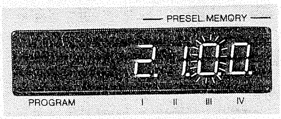
2. **Depress button "Pre-selection →"**
   Feed in the day "1" and the programme "P1"


PRESEL MEMORY
P
PROGRAM
I II III IV


PRESEL MEMORY
1-P1
PROGRAM
I II III IV

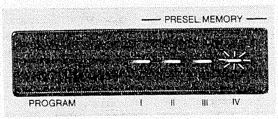
3. **Depress button "Pre-selection →"**
   Feed in the switch-off time "21.00"

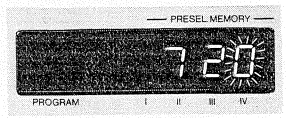

PRESEL MEMORY
PROGRAM
I II III IV


PRESEL MEMORY
2100
PROGRAM
I II III IV

PRE-SELECTION MEMORY IV

1. **Depress button "Pre-selection →"**
   Feed in the switch-on time "7.20"


PRESEL MEMORY
PROGRAM
I II III IV


PRESEL MEMORY
720
PROGRAM
I II III IV

To feed in the "day", "programme" and "switch-off time"-proceed as described above.